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ABSTRACT

A project is described that attempted to formulate a meaningful concept of adult performance levels, to devise instruments to measure performance at those levels, and to use those instruments to assess the functional competence of a representative sample of the population of the United States. Three levels of competence are defined in terms of income, education, and employability; competence is defined as a function of social demands and personal traits. Differences between performance levels are observed for communication and computation skills, problem solving, and interpersonal relations in the five areas of: (1) occupationally-related knowledge, (2) consumer economics, (3) government and law, (4) health, and (5) community resources. After an initial round of field testing, five independent nationally representative samples of 1,500 adults were tested in order to provide normative information. Results are reported for the five areas for the over-all measure of competence and also for the skill areas of reading, writing, computation, and problem solving. (Objectives for functional competence in each of the five areas are appended, as well as annual reports for the Adult Education Development Center for Texas and the Texas Adult Performance Level Competency-Based High School Diploma Pilot Program). (CTM)

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FINAL REPORT: The Adult Performance Level Study

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August 1977

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I. OBJECTIVES

The ability to use skills and knowledge with the functional competence needed for meeting the requirements of adult living is often called "functional literacy," "survival literacy," or occasionally "coping skills." The central objectives of the Adult Performance Level (APL) project are to specify the competencies which are functional to economic and educational success in today's society and to develop devices for assessing those competencies in the adult population of the United States.

Although millions, perhaps billions, of dollars have been spent on educational research, practically all of that money has been in support of studies designed to either develop educational programs or products or to compare the effectiveness or efficiency of competing programs and products. Unfortunately, questions of effectiveness and efficiency are irrelevant if the objectives on which programs are based are not appropriate.

Attempts to use the tools of behavioral and operations research to specify the transcendent objectives of educational systems have been practically nonexistent. Researchers are much more adept at answering the question, "Which reading program is most effective?" than the more fundamental question, "Why is reading important?" The Adult Performance Level project activities occur in the latter arena.

II. A THEORY AND METHODOLOGY OF ADULT FUNCTIONAL COMPETENCY

Project Background

In a memorandum for chief state school officers dated August 19, 1970, the Director of the Division of Adult Education Programs of the Office of Education invited submission of proposals for a research project leading to the establishment of an adult education system based on a systematic and accurate definition of adult functional literacy. In that memorandum, the philosophy of the APL project was first articulated: (1)

> The challenge is to foster through every means the ability to read, write, and compute with the functional competence needed for meeting the requirements of adult living.
>
> The emphasis of this definition is in its final phrase, "requirements for adult living." These requirements must be determined by an analysis of adult living rather than the common practice of attaching a grade equivalence to them. Existing grade equivalents cannot be effectively adapted to adult needs. This is not to say that school curricula do not prepare students for adult roles, but rather it says that the format in which school curricula are derived, their detailed content, and the way in which they are presented to school attendees are not applicable to adult learning frameworks. A system of adult education must derive its own specific aims and have its own adult based curricula, methodologies, and materials.

Although the request for proposals from state education agencies was somewhat vague concerning the desired outcomes (properly enough, considering what was being requested was a "state of the art" study), it is evident that at least the broad skill and knowledge areas had been identified in preparing the request for proposals. To quote again from the memo of August 19, 1970:

> The ultimate aim of ABE is to achieve an Adult Performance Level (APL) commensurate with the requirements

of adult living. The APL has four knowledge and skill components:

1. Adult reading level
2. Adult writing level
3. Adult computational level
4. General knowledge variables

Even though the specific outcomes of the APL project were not clear at this time, the uses for the results of the research project were. The study was to provide a systematic statement of the objectives of ABE, thereby helping to establish it as a separate, identifiable educational system. The study would help define the target population, since any adult whose performance was below a satisfactory APL would be deemed to be a candidate for ABE instruction. Finally, the study would provide direct input into the curriculum development process, leading to ABE programs which were better directed to the needs of the adult, rather than being based on elementary school curricula.

Because of a variety of funding and administrative problems, the APL project grant was not given until the summer of 1971. The grant, for an amount of $175,000, was awarded to the Texas Education Agency effective June 1, 1971. The Agency, in turn, subcontracted the major portion of the work to the Division of Extension of the University of Texas at Austin. Office space was located, and a project director hired in September of 1971.

Initial Project Activities

The original objectives of the study, as outlined in the proposal funded by OE, were stated as follows: (3)

> In developing the APL's for the four sub-areas of performance, it will be necessary to (1) determine the basic requirements (ABE aims) of adult living; (2) determine the basic performance criteria of the four sub-areas as they relate to specific tasks associated with

> the basic requirements of adult living; and (3) field test and graduate the levels of competency to be attained in each sub-area, starting with a minimal level.

The proposed procedure by which these three project objectives were to be met was essentially one of gathering and documenting "expert" opinion in the educational field in order to develop a statement of the aims of ABE. This first phase was to be followed by a second in which the services of a variety of technical experts in the fields of reading, psycholinguistics, adult education, educational psychology, sociology, economics, and educational testing would be used to analyze the information coming from the first project stage and to articulate the APL criteria.

Some important details regarding these planned procedures can be found in the first project proposal, entitled A Project to Design a Research System Leading to Delineation of Adult Performance Levels in Four Major Sub-Areas:

> In order to secure the opinions of expert professionals, (1) five regional meetings will be held throughout the nation; (2) selected individual interviews will be conducted with expert professionals; and (3) a mail survey will be sent to additional professionals.
>
> In selecting the persons for the mail survey, the interviewers, and the regional meetings, the following criteria will be employed: (1) representatives will be selected from adult education organizations, state employment commissions, social welfare agencies, municipalities, and business and industry; (2) representatives will reflect various ethnic categories, urban-rural orientation, and occupations.
>
> The basic requirements for adult living, as identified in the five regional meetings, and the preliminary statement of ABE aims also determined from the meetings will be validated and modified by means of a mail survey and personal interviews.

The first proposal also outlined in some detail how the APL criteria were to be developed:

> The performance criteria for the sub-areas will be developed from the specific tasks identified in regional meetings, personal interviews, and a mail survey, and will be directly associated with the basic requirements for adult living.
>
> Expert consultants...will develop specific performance criteria for the four sub-areas.
>
> There will be an analysis of reading and other printed materials which the adult must use in order to operate and work within a community. These materials will be gathered from various sources within the industry and the community. Such materials will include newspapers, magazines, job applications and other job-related materials, forms from the various agencies in the community, and other adult user materials. Once the materials have been collected, they will undergo a content analysis to determine word usage and comprehension factors.

The third project objective, which was the graduation and validation of the APL's, was to be accomplished by means of a field test:

> Arrangements will also be made to field test the APL's in order to graduate the degree of difficulty of the criteria within each sub-area. Arrangements will also be made to subsequently validate the APL's and to check for reliability.

The APL Theory of Functional Competency

As authorized by the project proposal (3), an extensive review of the research design was undertaken by the project staff. In the course of the discussions which took place over the next several months, some major concerns about the effectiveness of the proposed research slowly began to take shape. These finally resolved to three problem areas which corresponded roughly to the main lines of activity described in the original proposal:

1. Would the method of using a variety of "experts" in education and allied fields be sufficient to develop the "aims of ABE?" It seemed unlikely that this method, especially in the form of the regional meetings outlined in the origi-

nal proposal, would provide useful statements of the basic requirements for life.

2. Would the "technical experts" be able to meaningfully analyze the information derived from the proposed regional meetings? These technical experts were supposed to be able to articulate the APL's from the data derived from the regional meetings and from adult reading and other printed materials. Exactly how this was to be accomplished was not clear in the proposal and was certainly not clear to the project staff. Furthermore, initial study of the problem indicated that most reading specialists, for example, would simply translate the difficulty of adult reading materials into grade levels--an approach which seemed to be the antithesis of the entire project philosophy.

3. What was the framework upon which to base project activities? Other than the four major areas of reading, writing, computation, and general knowledge, "functional literacy" as a construct was very ill-defined. That the adult performance levels were to be based on something more than just reading, writing, and arithmetic skills was quite clear, but exactly what the extra dimention should be was not at all obvious.

These concerns, accompanied by the failure of some early attempts to implement the original research design, led to the evolution of the final APL framework. The staff focused on the first objective of the project, which was to identify the basic requirements for adult living (which would become, hopefully, the objectives for future ABE systems). Rather than rely on expert opinion alone, four simultaneous lines of research were pursued:

1. Review of related literature and research. A wide variety of behavioral and social research was reviewed in the search for a way to categorize the needs of the undereducated and underemployed adult. These sources ranged from the early descriptions of educational goals from the 'twenties (remember the

Seven Cardinal Principles?) to Maslow's hierarchy of needs to Havighurst's Developmental Tasks. In addition to the traditional sources of information, the documentation of dozens of studies or projects which had so-called disadvantaged groups as their target was also collected and reviewed. Data gathered by the National Assessment of Educational Progress project was also of great use.

2. An extensive survey of state and federal agencies and foundations was conducted in order to identify characteristics which distinguished the successful from the unsuccessful adult. The assumption was that a major source of knowledge of minimum performance criteria existed in the experiences, accumulated data, and reports of professionals who deal with the minimally performing adult. These professionals primarily represented the state and federal agencies which operate programs dealing with the under or unemployed, the handicapped, or the socially or culturally diverse. For example, interviews were conducted with 49 individuals from 25 different state and federal agencies during the initial phase. These persons provided literature, studies, data, and comments relevant to the objectives of the project.

3. A series of conferences on adult needs was conducted in different regions of the country. Adult educators, members of the private sector (for example, supervisors and personnel managers), and members of different state and federal agencies were brought together to review APL progress and to add their insights and information to the pool.

4. A continuing series of semi-structured interviews with undereducated and underemployed persons was begun in order to gather some first-hand data on their felt needs.

The result of these activities, which occupied much of the first year of

the study, was a taxonomy of adult needs which finally came to be called "general knowledge areas." These general knowledge areas, which may be considered as the content of adult literacy, are now known as (1) consumer economics, (2) occupational (or occupationally-related) knowledge, (3) community resources, (4) health, and (5) government and law.

Having identified the general knowledge areas which seemed to be the most critical to adult performance related to the acquisition of literacy, data which had been obtained were then reanalyzed. This time, however, the concern was not with the content of literacy, but with the skills involved. Four primary skills seemed to account for the vast majority of requirements placed on adults. These skills were named (1) communication skills (reading, writing, speaking, and listening), (2) computational skills, (3) problem solving skills, and (4) interpersonal relationship skills.

By this time it should be clear than the concern of the APL project is much more than the stereotypical notion of literacy. Because the term "literacy" popularly connotes a low level of functioning (e.g., ability to read and write one's name) which may have nothing to do with functional competence, we have chosen to excise the word from the rest of this exposition. Instead, we will consistently use the phrase "functional competency." This practice seems to be preferable to re-educating the whole world concerning the true meaning of literacy.

APL findings allowed for the construction of a general theory of adult functional competency which is summarized below:

1. Functional competency is a construct which is meaningful only in a specific societal context. A correlary of this thesis is that, just as functional competency is culture-bound, it is perhaps even more closely bound to the tech-

nological state of a particular society. The person who is functionally competent in one society may be incompetent in another. Furthermore, as technology changes, the requirements for competency change.

This thesis has profound implications for the assessment of functional competency. It is obvious that any complex society such as that of the United States is composed of many different subcultures. In this country, we give these subcultures ethnic tags, or demographic tags, or geographic tags, or even tags which are combinations of some of the above.

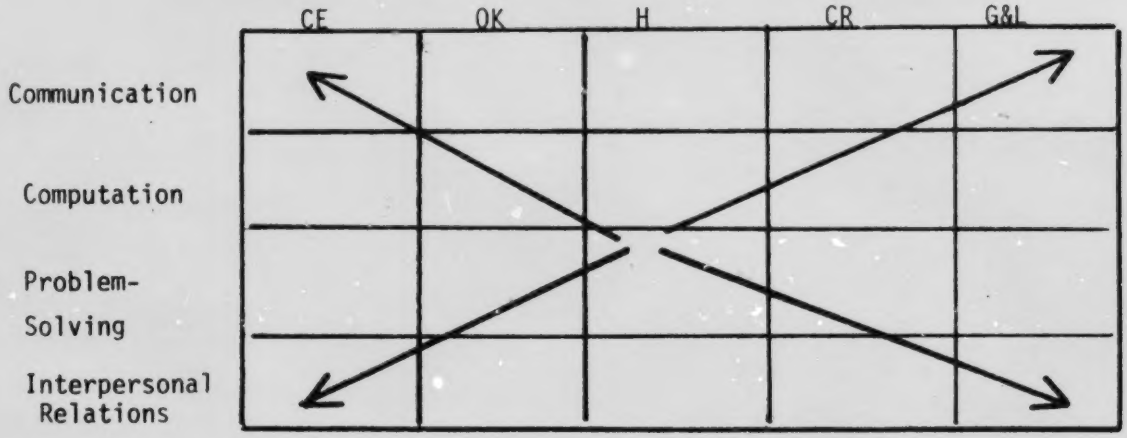
The dilemma is whether to develop a measure of competency unique to each subculture, or to create a single indicator identifying societal requirements common to the preponderance of the population. Evidence indicates that the latter strategy is more viable. For example, even though ethnic differences do exist on APL measures of competency, the important relationship of competency to various indices of success still holds true within ethnic groups.

2. Functional competency does not consist just of a single skill or even a set of skills. Functional competency is two-dimensional rather than unidimensional, and is best described as the application of a set of skills to a set of general knowledge areas which result from the requirements imposed upon members of a society. The APL project uses this two-dimensional model as the basic framework for generating the essential elements of adult functional competency, which are coping behaviors called "performance requirements" or "tasks". (Figure 1.)

APL research indicates that functional competency is composed of an application of the communications skills, computation, problem solving, and interpersonal relations to the general knowledge areas of occupational knowledge, consumer economics, community resources, government and law, and health.

FIGURE 1

APL TAXONOMY OF FUNCTIONAL COMPETENCY



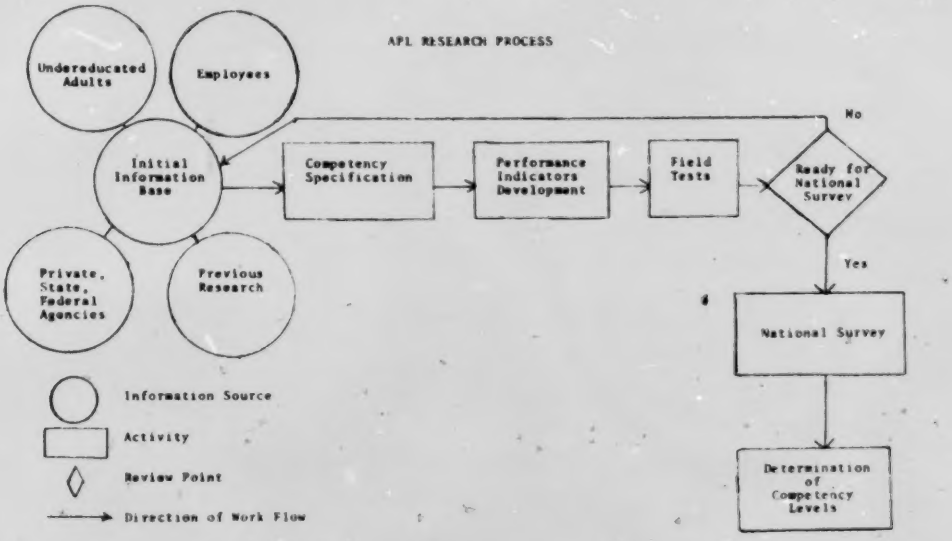
Furthermore, adult competency is not just a characteristic of the individual--it is a function of both individual capabilities and societal requirements. To restate the thesis: A person is functionally competent only to the extent that he or she can meet the requirements which are extant at a given point in time. If the requirements change and the individual does not adapt by either acquiring more or different knowledges and skills, then that person becomes less competent. Functional competence is a dynamic process, rather than a static state.

3. Functional competency is directly related in a mathematical sense to success in adult life. This is an operating assumption which underlies all APL research activities. However we define functional competency, we expect more competent adults to be more successful.

The APL project has drawn from a variety of educational, sociological, economic and behavioral studies to analyze different criteria of success. Based on this experience, an index of success is used which is a composite of (1) income, (2) level of education, and (3) occupational status. The assumption that

competency is directly related to success implies that not only must the measure be derived from performances which are taken from the adult milieu, but that performance on such a measure must be positively correlated to success.

Once a general theory of functional competency had been developed, and a taxonomy of associated adult performances created, the way was open for the evolution of the final APL methodology, which is summarized in Figure 2 and in the discussion which follows:



Methodology

1. Specification of competencies. From the sources of information identified previously (review of literature, survey of state and federal agencies, conferences on adult needs, and continuing interviews with undereducated and underemployed adults) the coping behaviors or performance requirements are aggregated into general requirement statements called "objectives". These objectives are keyed to the five general knowledge areas of occupational knowledge, consumer economics, health, community resources, and government and law. The

set of objectives, taken as a whole, form the APL description of the behaviors which are important to adult competency. A copy of the APL objectives can be found in Appendix A.

2. Development of performance indicators. Performance indicators are written for each competency. These are not "test items" in the traditional sense. Since they reflect requirements taken from adult life, they are small simulations of the requirements which are demanded of the adult by his or her society.

The performance indicators require the adult to employ communication skills, computation skills, problem solving and interpersonal relations skills in a variety of adult-related situations. Examples of these situations, which are also keyed to the general knowledge areas, are given below:

Occupationally-Related Knowledge

--Writing a business letter

--Writing and responding to employment advertisements

--Having knowledge about social security and filling out a social security form

--Calculating the amount of pay under different circumstances of remuneration and benefits

--Relating employee characteristics to job requirements

--Interpreting an earnings statement

--Completing an employment application

--Matching jobs to work situations and tools

--Understanding occupational briefs

--Interpreting information regarding insurance plans

--Reading employment notices

--Reading help-wanted advertisements

--Exhibiting appropriate interpersonal behavior in different job-related situations

--Calculating the number of vacation days, annual pay, and other important financial aspects of employment

--Possessing general knowledge about unions, employment agencies, job security, personal relations on the job, and employment attitudes.

Consumer Economics

--Possessing common business-related and consumer economics vocabulary

--Interpreting advertisements as presented by different media

--Reading and understanding check cashing policies

--Reading and understanding payment schedules, money orders, loan statements, and credit policies

--Balancing a checkbook

--Applying for a loan

--Buying on a comparison basis and calculating unit prices

--Possessing knowledge of the basics of contracts, mortgages, checking account, interest, bank operations, credit cards, advertising, income tax, and insurance

--Reading and making calculations from cash register receipts

Government and Law

--Determining which groups can hold public meetings

--Completing a letter to a Congressional Representative

--Determining under what circumstances a person may be detained by the police

--Choosing which state on a map has the most representatives and senators

--Calculating time spent in prison before being eligible for parole

--Computing amount of tax on different items

--Reading and interpreting a paragraph on one's rights after arrest

Health

--Interpreting a hospitalization insurance policy

--Determining what public reaction followed publication of a novel

--Determining the normal human body temperature

--Interpreting a graph depicting the level of effectiveness of common pain relievers

--Selecting the food which is highest in protein

--Writing a letter to a teacher to excuse a child's absence

--Interpreting a calorie chart

Community Resources

--Addressing an envelope

--Computing the cost of swimming lessons

--Reading and interpreting a road map

--Reading and interpreting flight, bus, or train schedules

--Defining common terms in drivers license manuals

--Completing an employment complaint form

3. Field test and subsequent revision. Initial versions of the performance indicators are field tested with undereducated and underemployed adults. As documented by the first APL project report (2), an initial round of field testing involving some 3,500 adults was conducted with the cooperation of Adult Basic Education programs in 30 states. Since that time, several thousand more adults have been tested in a number of states with subsequent versions of the performance indicators. Field testing and subsequent revision of perform-

ance indicators is a continuous, rather than one-time process, as indicated by the flow of activities in Figure 2.

Information gathered during the field test stage is used to respecify objectives and to improve the quality of performance indicators. These revised versions of both objectives and indicators are fed back to the original information sources for further revision and specification. The entire specification-field test-feedback-respecification process is cycled as many times as is necessary to reach concensus regarding a given objective, although typically three iterations are required. Each objective must also meet the empirical tests of non-triviality and of positive correlation to various indicators of success. (Those of you who are so inclined will recognize this method as a somewhat modified Delphi technique.)

4. National assessment of competency. The next step in the APL research process is to determine national levels of performance with regard to the objectives. Performance indicators are formatted into a series of interview schedules. With the assistance of a subcontractor (Opinion Research Corporation, Princeton, New Jersey) a representative sample of adults is drawn from the continental United States, excluding Alaska and Hawaii, and data are obtained from this sample. To date, five independent samples of the population have been drawn, each with a size of not less that 1500, for a total of 7,500 adults. The overall precision of each sample is about 4% at the 95% confidence level for an item which breaks at the 50-50 level.

Appendix B contains a description of the sample design, information regarding sample precision and accuracy, and a description of field procedures. Appendix B also contains detailed information regarding returns processing, specific criteria for scoring open-ended responses, and associated materials.

5. Determination of competency levels. The final stage of the process is to determine meaningful and well-defined competency levels from data gathered in the various national surveys. This determination is accomplished by (1) examining the performance of the population on an objective-by-objective basis, and (2) describing overall competency in terms of three levels based on an aggregate index. Although a summary of the results is presented in the next section, it is appropriate at this time to describe how the aggregate index of functional competency is defined.

In essence, the nationally representative survey data are used to develop "competency profiles" which are associated with different levels of adult success as measured by income, job status, and education. Three such levels have been chosen. These levels are called simply APL 1, APL 2, and APL 3.

APL 1

(LEAST COMPETENT ADULTS)

APL 1's are those adults whose mastery of competency objectives is associated with

1. Inadequate income--poverty level or less
AND
2. Inadequate education--eight years of school or fewer
AND
3. Low job status--unemployed or unskilled

APL 2

(MARGINALLY COMPETENT ADULTS)

APL 2's are those adults whose mastery of competency objectives is associated with

1. Marginal income--more than poverty but no discretionary income
AND
2. Marginal education--nine to 11 years of school
AND
3. Semiskilled to upper-level blue collar and sales job status

APL 3

(MOST COMPETENT ADULTS)

APL 3's are those adults whose mastery of competency objectives is associated with

1. Highest levels of income--varying amounts of discretionary income
AND
2. Highest levels of education--high school completion or more
AND
3. White collar or professional-management job status

Notice that each of the three APL levels is a conjoint definition based on predicted income, education, and job status. Test data are used to "predict" an adult's success level, based on his functional competencies. Those persons classified as APL 1 are, by and large, "functionally incompetent". APL 2's are competent, but only marginally so; and APL 3's are the most competent group, in that their mastery of competency objectives is associated with the highest levels of income, job status, and education.

For those of you who are statistically inclined, Appendix C contains an explanation of the procedure used to create the APL levels. A rather straightforward adaption of Bayes Theorem is used to accomplish the task. For the non-statistician, it is sufficient to say that the performance and demographic data from the national samples are used to develop conditional probabilities which relate competency to success. Given a particular competency profile, it is possible to estimate an associated success level.

Since the sample data are nationally representative, it is possible to estimate the proportion of the U. S. adult population which comprises each APL level. A discussion of these and other results follows.

III. HOW FUNCTIONALLY COMPETENT ARE U.S. ADULTS?

In general, the answer to the question posed by this section is "not as competent as we thought." Overall, approximately one-fifth of U.S. adults are "functionally imcompetent". This estimate is based on a representative sample of adults performing on indicators which cover the five general knowledge areas and four skills. When broken into the individual knowledge areas and skills, this level of incompetence (APL 1) ranges from 16% for writing to 33% for computation. Thus, at least for one of the skills deemed important for survival in this society, about one-third of U.S. adults are incompetent.

The results for the APL national survey will be organized as follows: (1) For each general knowledge area, examples of the performance requirements with results indicating the percentage of APL 1's, 2's, and 3's will be presented; (2) For each skill the percentage of APL 1's, 2's, and 3's will be reported; and (3) A general discussion of the results by demographic groupings and for the U.S. population as a whole will ensue. The demographic variables will be age, regions, level of education, sex, occupation of chief wage earner, family income, city size, number of persons in household, employment status, and ethnicity. Each demographic group will be broken into several categories, and the percent of APL 1's, 2's, and 3's will be presented and compared across these categories.

The following are examples for which particularly interesting levels of performance were noted for the general population and for certain demographic groups.

Occupationally-related Knowledge

Given a monthly earnings statement containing the gross salary deductions

by type and net salary, only 83% of the sample correctly determined the total amount of deductions. Further, 26% of the sample, or a projected 30,697,000 adults, did not interpret the statement well enough to locate the specific deduction for social security. This item illustrates the wide disparity among different educational levels that is often found on many APL requirements, with only 65% of those with eight or fewer years of school getting the item right while 84% of college graduates in the sample located the correct amount on the form.

Seventy percent of the sample, given a W-4 form and information concerning the number of dependents, did not enter the correct number of tax exemptions in the appropriate block of the form.

Only 62% of the sample, when given a series of newspaper "Help Wanted" advertisements, were able to correctly match personal characteristics to job requirements. These results produce an estimated 45 million adults who would not correctly perform the task according to the requirements of the survey.

About one-fifth of the sample did not select the correct written or verbal definition of an "Equal Opportunity" notice.

When given an hourly pay rate, the number of hours worked per week, and the rate of pay for overtime, only two-thirds of the sample calculated the correct amount of pay for a given number of hours worked per week. Only 58% of those with eight or fewer years of school calculated the correct amount of pay, while 86% of college graduates did so.

Further evidence that even the simplest calculations are difficult for large numbers of Americans is found in a task dealing with calculating the number of months required to pay an employment agency's fee, given a situation in which the agency charges a percentage of one's annual salary. Only 61% of

the entire sample got the item right. Only 40% of those with less than $5000 annual family income calculated the correct answer, while 74% of those with $15,000 or more solved this problem. Only a little over one-fourth of those with eight or fewer years of school made the correct calculations, while 87% of college graduates did so.

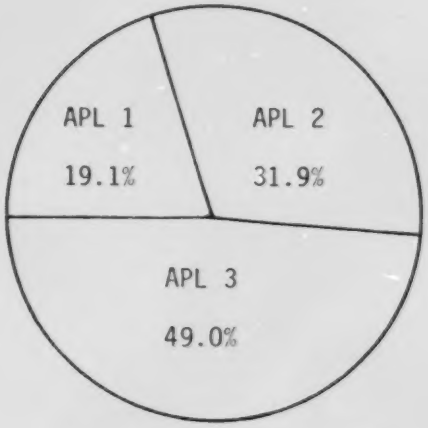
When given the amount of monthly pay before deductions and the amount of monthly deductions, only 71% of the sample calculated the total yearly take-home pay correctly. Only 49% of those with eight or fewer years of school performed this task correctly, while 75% of high school graduates and 86% of college graduates did so.

Only 67% of the sample knew the definition of the term "open shop" as required by the survey. Large variance in the knowledge of this term was observed in terms of education, with only 43% of those with eight or fewer years of school identifying the correct definition while almost three-fourths of high school graduates and 90% of college graduates did so. Wide variation with respect to income was also observed. Of those with less than $5000 income, 60% knew the definition while 88% of those with $15,000 or more annual income identified the correct definition.

Figure 3 shows the proportion of the adult population which are APL levels 1, 2 or 3 as determined by performance on those items in the test which measure occupationally-related knowledge. As can be seen, approximately one-fifth of the population falls into the lowest level (APL 1). Almost one-third of the population is ranked APL 2, with slightly less than one-half of the population being categorized as within the "most competent" APL 3 group. Of all five of the general knowledge areas, occupationally-related knowledge items produced the fewest number in the APL level 1 category.

FIGURE 3

APL LEVELS FOR OCCUPATIONAL KNOWLEDGE



Consumer Economics

When given a notice posted on a cashier's desk in a store describing the check cashing policy for that store, more than one out of five respondents did not draw the correct conclusion from the notice as required by the conditions of the survey. Only 54% of those with eight or fewer years of school performed correctly on this requirement, while 80% of high school graduates and 93% of college graduates did so. Eighty-nine percent of those in the lowest socio-economic status occupations performed correctly on this task, while 99% of those in the highest levels got the item right.

Fourteen percent of the sample, when asked to fill out a check in a simulated business transaction, made an error so serious that it was unlikely that the check would have cleared the bank. Forty-four percent of those with eight years or fewer of school made serious errors in filling the check form, while only 7% of high school graduates and 6% of college graduates made similar errors.

When given pictures of three competing packaged cereals marked by net weight and price, only three out of four respondents identified the cereal which, in the sense of lowest cost per ounce, was the "best buy".

When presented with a receipt from a pharmacy containing a series of purchases and a total, 72% of the sample calculated the correct amount of change due from a twenty dollar bill. Sixty-two percent of those with less than $5000 family income determined the correct amount of change, while 78% of those with $15,000 or more did so. Sixty-eight percent of those who held occupations in the lowest socio-economic status level determined the correct amount of change, while more than three out of four of those in the highest level got the item right.

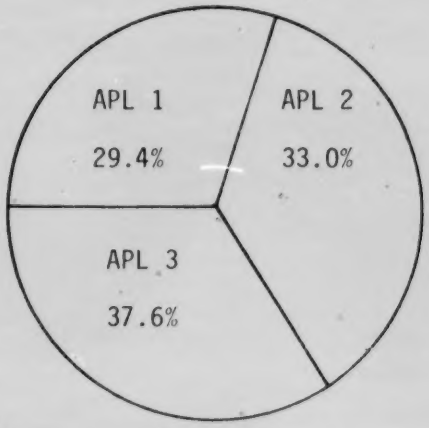
Only 74% of the sample gave a correct definition for the term "credit check". Only 62% of those respondents with less than $5000 annual family income gave the correct definition, while 82% of those with $15,000 or more understood the meaning of the term, as measured by the conditions presented in the interview. Seventy-two percent of those who held low socio-economic status occupations gave the correct definition, while 84% of those in the highest level did so. Only 54% of those persons with eight or fewer years of school understood the term, while over three of four high school graduates and 87% of college graduates did so.

Figure 4 shows the proportion of the adult population which are APL levels 1, 2, or 3 as determined by performance on those items in the test which measure competency in consumer economics. Almost 30% of the population falls into the lowest level (APL 1) while exactly one-third of the population is categorized as an APL 2. Almost 38% of the population is ranked as an APL 3. Of the five general knowledge areas, consumer economics has the closest balance among

the three APL levels, having only 4 percentage points between APL levels 1 and 2 and levels 2 and 3. There are fewer APL level 3 respondents than in the other knowledge areas, which is evidence that consumer economics, while an exceptionally important area, is also one which proves difficult for the respondents.

FIGURE 4

APL LEVELS FOR CONSUMER ECONOMICS



Government and Law

When asked to complete a letter to a U.S. Representative advocating that he vote against a particular bill, 13% of the sample did not properly identify the bill in question, and 20% did not include any recommendation that the Representative vote against the bill.

When given a pamphlet advising one of one's rights when arrested and asked to underline the sentence which was most apropos to a situation described in the interview, 58% of the sample failed to underline the correct portion. Only 29% of those with less than $5000 annual family income underlined the correct por-

tion, while 51% of those with $15,000 or more did so. Only 37% of those in the lowest socio-economic status occupations underlined the correct portion, while 53% of those in the highest level did so. Eighteen percent of those persons with eight or fewer years of school performed this task correctly, while 59% of college graduates did so.

When given the total number of years of a prison sentence, and the portion of the term which was necessary to be served before an inmate is considered eligible for parole, only 47% of the sample correctly calculated the amount of time necessary for parole eligibility. Only 27% of those respondents with eight or fewer years of school met criterion in this case, while 68% of college graduates did so.

Further evidence that simple arithmetic is quite difficult for many American adults is found in an APL requirement which asks respondents to calculate the total amount of tax on a series of purchases, given the tax rate for each item. Fifty-one percent of the sample correctly determined the total tax. Thirty-nine percent of those persons with less than $5000 annual family income determined the correct total, and only 55% of those with $15,000 or more did so. About one of three persons with eight or fewer years of school met this particular requirement, and only 64% of college graduates did so.

In another question regarding individual rights with respect to arrest and detainment, a shocking 34% of the sample felt that police had the authority to detain a suspect for as long as a week without bringing charges against him. Fewer than half of those persons with eight or fewer years of school recognized the illegality of the situation described in the interview, while four of five college graduates did so. Only 58% of those in the lowest socio-economic occupational levels recognized the situation as being illegal, while four of five

of those in the highest level did so.

Concerning the right to peaceful assembly, 12% of the sample felt that permission to have peaceful public meetings should not be given to certain kinds of groups; e.g. "radicals" and "troublemakers". About one of eight persons in the sample felt that the right of peaceful public assembly was not common to all Americans, but should be withheld from some. One of five persons with less that $5000 annual family income did not feel that the right to public assembly should be accorded to all citizens, while less than one of ten in the highest income level felt so.

Six percent of the sample, or an estimated 7.1 million adults, could not determine the population of a state, given a map of four imaginary states with the population printed clearly upon each state. Fourteen percent could not determine which state had the most representatives in the U.S.Congress. Only 75% of those with less than $5000 annual family income could make this determination from the information on the map, while 92% of those with $15,000 or more could. Sixty-eight percent of those respondents with eight or fewer years of school knew which state had the most representatives, while 97% of college graduates did.

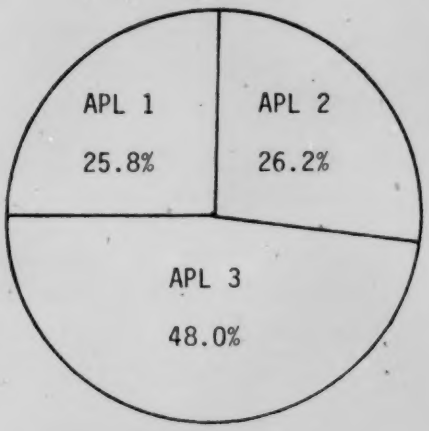
When asked which of the states on the map had the most senators, only 51% recognized that all states have the same number of senators. Only about one of three persons with less than $5000 annual family income knew that each state has the same number of senators, and only 61% of those with $15,000 or more responded correctly. Only one of four persons with eight or fewer years of school met criterion on this task, while 85% of college graduates did so.

Figure 5 shows the proportion of the adult population which are APL levels 1, 2, or 3 as determined by performance on those items in the test which mea-

sure an understanding of government and law. As can be seen from the figure, a little over one-quarter of the population falls into the APL level 1 category. Only slightly over the same percentage falls into the level 2 category while close to one-half of the population is categorized as APL 3.

FIGURE 5

APL LEVELS FOR GOVERNMENT AND LAW



Health

When given a calorie chart and a verbal and written description of a meal eaten by a person, only 56% of the sample correctly calculated the total caloric intake. Only 38% of those persons with less than $5000 family income met this particular requirement, while 68% of those with $15,000 or more did so. A bare 25% of those persons with eight or fewer years of schooling successfully completed this task, while 79% of the college graduates did so.

A fascinating 27% of the sample did not know the normal human body temperature. Only 71% of those in the lowest socio-economic occupational status level knew normal body temperature, while 80% of those in the highest did. Half of

those persons with eight or fewer years of school knew the normal body temperature, while 86% of college graduates did.

Respondents were asked to write a note to their child's teacher, excusing the child for missing a day of school due to a sore throat. Twenty-two percent of the notes written by respondents did not have a salutation; seven percent had no comprehensible message at all; seven percent did not identify the child who was to be excused; twenty-nine percent of the notes contained no signature; and three percent were written so badly that they were judged to be illegible.

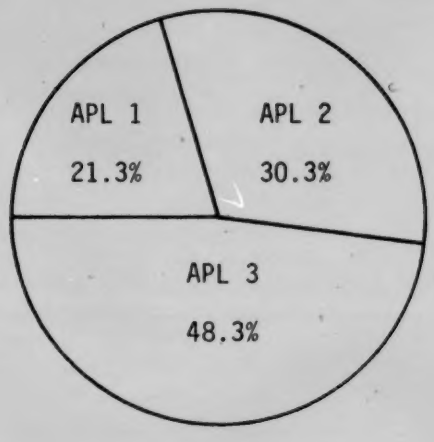
When given a portion of a health insurance policy explaining eligibility and amounts paid for different conditions, 27% of the sample did not determine accurately the amount paid by insurance for a specific condition. Only 59% of those persons with less than $5000 annual family income gave the correct response to the situation, while 80% of those with $15,000 or more did so. Only 49% of those with eight or fewer years of school met this requirement, while 79% of college graduates did so.

When asked to interpret a graph similar to that used by an advertisement for a common non-prescription pain reliever, only two or three respondents met criterion. Fifty-one percent of those with less than $5000 annual family income gave the correct answer to the question, "Which brand is more effective after 25 minutes?", while 78% of those with $15,000 or more did. Only 41% of those with eight or fewer years of school gave the most appropriate answer to the question, while 90% of college graduates gave the correct answer.

Figure 6 shows the proportion of the adult population which are APL levels 1, 2, or 3 as determined by performance on those items in the test which measure a knowledge of health. Slightly over one-fifth of the population is projected to be APL 1, 30% as APL 2, and close to one-half as APL 3.

FIGURE 6

APL LEVELS FOR HEALTH



Community Resources

Thirteen percent of the sample did not address an envelope well enough to insure that it would reach the desired destination, and 24% did not place a return address on the same envelope which would insure that it would be returned to the sender if delivery were not possible. These results indicate that an estimated 28 million adults would make a serious error in addressing an envelope under conditions identical to those of the survey.

When presented with a problem involving a percentage reduction in the allocation of home heating oil, and asked to calculate the new allotment of heating oil for their home, only 63% of the respondents correctly calculated the new allocation. Forty-nine percent of those with less than $5000 annual family income correctly calculated the new allocation, while 70% of those with $15,000 or more did so. Fifty-three percent of those respondents whose chief wage earners were in the lowest socio-economic status level got this item right, while 76% of those in the highest level did so. Only 42% of

those persons with eight or fewer years of school met criterion on this task, while almost 84% of college graduates gave correct responses.

In another APL requirement dealing with the use of community resources, respondents were asked to calculate the total amount of money required in order to give swimming lessons for five children at the local YMCA, given the Y's payment schedule. Twenty-one percent of the sample did not calculate the total bill correctly.

When asked to read and interpret a road map, 14% of the sample did not meet criterion. Seventy-two percent of those with less than $5000 annual family income met criterion on reading a road map, while 94% of those with $15,000 or more did so. Only 77% of the lowest socio-economic status level occupations interpreted the map correctly, while 93% of those in the highest levels did so. Sixty-four percent of those persons with eight or fewer years of school got the road map requirement right, while 96% of college graduates scored correctly.

In an APL task requiring the respondent to read an airline flight schedule, which is quite similar to a bus or train schedule, only a little more than two-thirds of the sample correctly identified the flight which had to be taken in order to meet certain travel constraints. Only 39% of those persons with eight or fewer years of school got this item right, while 82% of college graduates did so. Only 62% of those in the lowest socio-economic status level determined the correct flight number, while 82% of those in the highest did so.

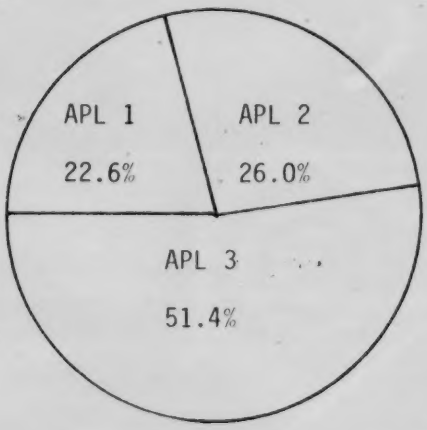
When given four definitions of the term "right-of-way," similar to those used in many state drivers' handbooks, only 70% of the sample identified the correct definition. A little over half (57%) of those respondents

with less than $5000 annual family income identified the correct definition of the term, while 81% of those with $15,000 or more did so. Only 45% of those respondents with eight or fewer years of school identified the correct definition, while 72% of high school graduates and 92% of college graduates did so. Sixty-two percent of those respondents in the lowest socio-economic status occupations identified the correct definition of "right-of-way," while 84% of those in the highest level gave the correct definition.

Figure 7 shows the proportion of the adult population which are APL levels 1, 2 or 3 as determined by performance on those items in the test which measure a knowledge of community resources. Slightly over one-fifth of the population falls into the APL 1 category while a little over one-fourth of the population is categorized as APL 2. Of all five general knowledge areas, community resources produces the largest number of persons in the APL 3 category (51.4%).

FIGURE 7

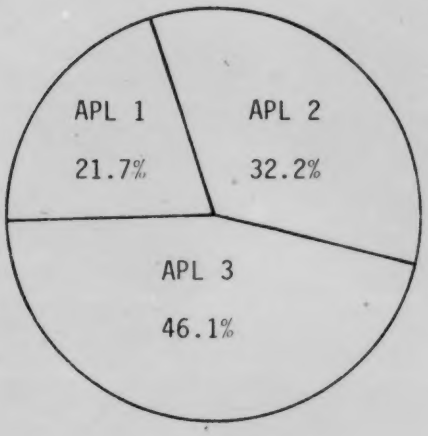
APL LEVELS FOR COMMUNITY RESOURCES



As mentioned earlier, the APL staff has translated literacy to mean far more than being able to read and write at some given level. While not denying or in any way reducing the importance of reading and writing, the APL incorporates not only these two skills but also those of computation and problem solving, using them in situations which are encountered in the normal daily life of an adult. All four of these skills have been tapped in the APL test items. The following figures break the overall population down into APL levels 1, 2 or 3 depending on their performance on those items in the test which tap each of the four skills mentioned above.

FIGURE 8

APL LEVELS FOR READING



As shown in Figure 8, a little over one-fifth of the population falls into the APL 1 category when reading is assessed. Almost one-third falls into the APL level 2 group and the highest competency group, APL 3, comprises 46.1% of the population.

FIGURE 9

APL LEVELS FOR WRITING

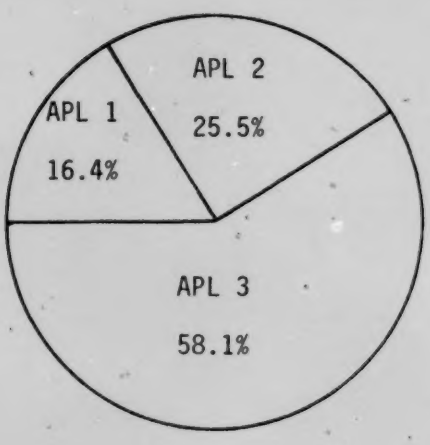


Figure 9 shows that of the four skill areas, writing items from the test produce the fewest number of persons at the APL 1 level (16.4%) and the highest number classified as APL level 3 (58.1%). The remaining one quarter of the population falls into the APL 2 category.

FIGURE 10

APL LEVELS FOR COMPUTATION

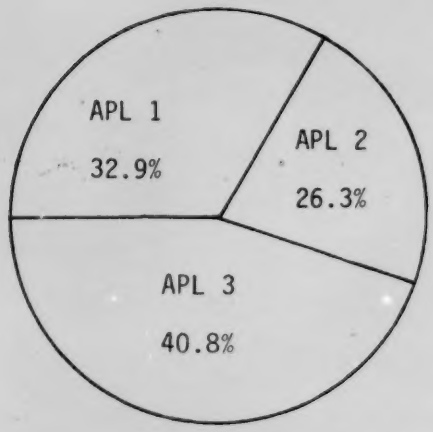


Figure 10 illustrates the comparative difficulty of those test items which call for any mathematical calculations. Those items produce the highest number of persons in the APL 1 category (32.9%) and the fewest number of persons in the APL 3 group (40.8%) for any of the four skills assessed.

FIGURE 11

APL LEVELS FOR PROBLEM SOLVING

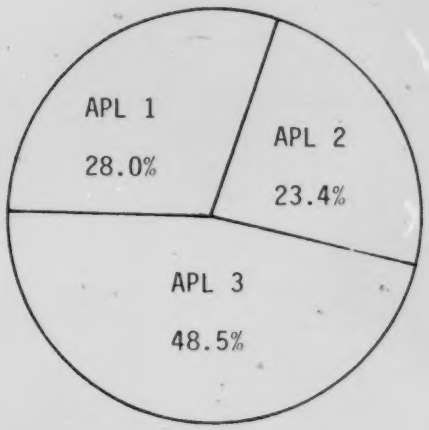
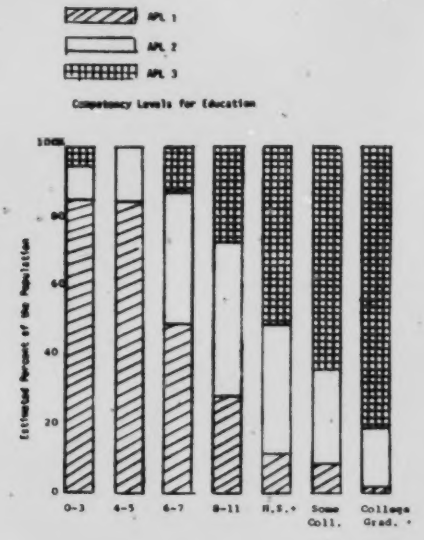


Figure 11 shows that 28% of the population falls into the APL 1 category when confronted with test items which call for general problem solving. Almost one quarter of the population is categorized as an APL 2 while almost half are in the APL 3 highest competency group.

The purpose for selecting certain demographic groupings and comparing the results within a group, is to discover trends which might arise, and when appropriate, to use these trends to pinpoint adults that may have special needs. Since "success" was an important variable in this study, the first three comparisons will deal with the three measures of success, level of education, family income and occupation of chief wage earner. In general,

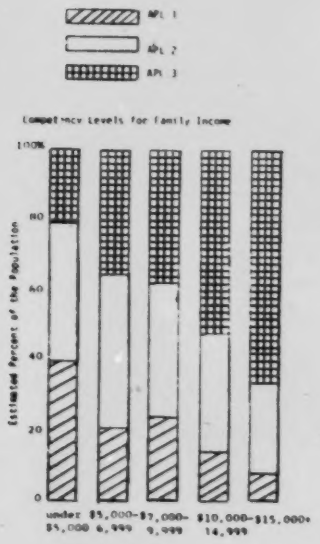
all three indices demonstrate a positive relationship with performance on the APL Survey. The following figures break out the overall population into APL levels 1, 2 or 3 in terms of the demographic variables of the survey.

FIGURE 12



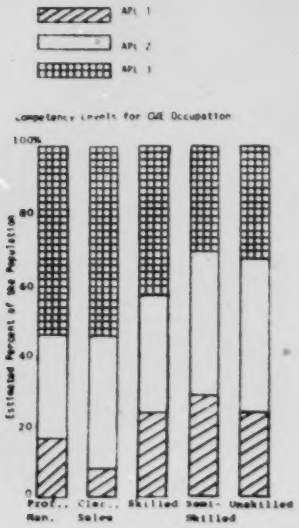
For level of education, the percentage of APL 1's rises steadily from about 2% for college graduates to about 85% for adults with less than 4 years of formal schooling.

FIGURE 13



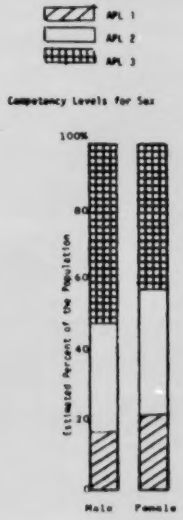
For family income, the percentage of functionally incompetent persons rises from about 8% for incomes of $15,000 or greater to 40% for those indicating a poverty income.

FIGURE 14



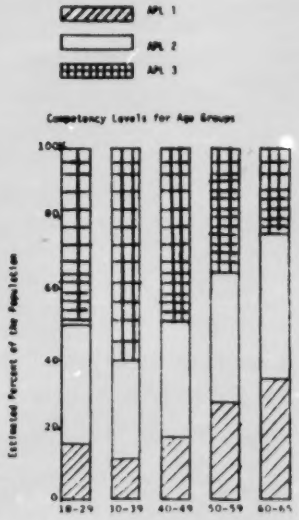
For occupation of chief wage earner, the percentage of APL 1's rises from about 11% for the professional and managerial category to approximately 29% for the semi-skilled and 30% for the unskilled.

FIGURE 15



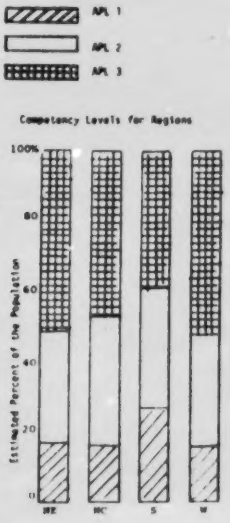
Concerning the sex of the adult, it appears that males and females perform about the same. There are minor differences, though, with males estimated to have a greater percentage of APL 1's than females.

FIGURE 16



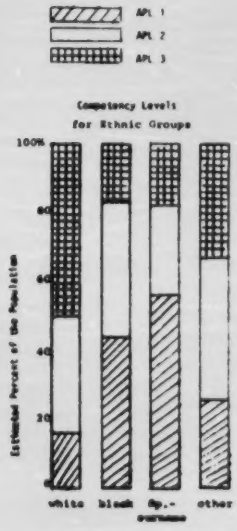
As for the age grouping, there was a negative relationship between age and performance. Although the youngest group (18-29) did not have the lowest level of functionally incompetent adults, still the general trend is that the older the individual, the more likely that he/she is incompetent. More than 35% of adults 60-65 are estimated to be functionally incompetent, while only 11% of adults 30-39, and 16% of adults 18-29 are found to be so. Perhaps the best explanation for these results lies in the educational differences between these age groups, with younger adults having more formal schooling then their older counterparts. One would expect experiential knowledge which comes with age to somewhat offset the effect of educational differences and perhaps this is reflected in the results for the 30-39 age group. In general, though, the results do indicate greater needs on the part of the aged.

FIGURE 17



The demographic comparison of regions of the U.S. indicates that while the Northeast, North Central and Western parts of the U.S. have about the same percentage of APL 1's, 2's and 3's, the South has a higher level of APL 1's and a lower level of APL 3's. While all other regions of the country are estimated to have about 16% functionally incompetent adults, in the South there are approximately 25% predicted to be APL 1's. Thus, a greater percentage of adults in the South appear to be in need of educational assistance than other parts of the country.

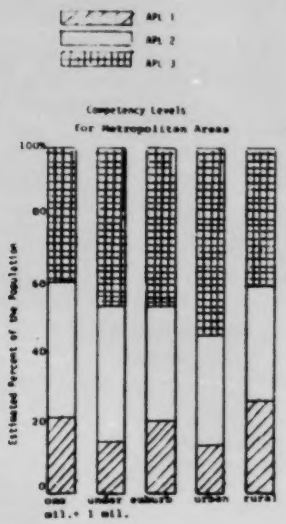
FIGURE 18



As for the ethnic groups, it appears that there are great differences between Whites and all minority groups. While less than 20% of the Whites were estimated to be functionally incompetent, more than 40% of the Black and Spanish surname groups were estimated to be so. Here, as with other variables that have been discussed, the differences are probably due to the relatively lower levels of income, education, job status, and opportunity

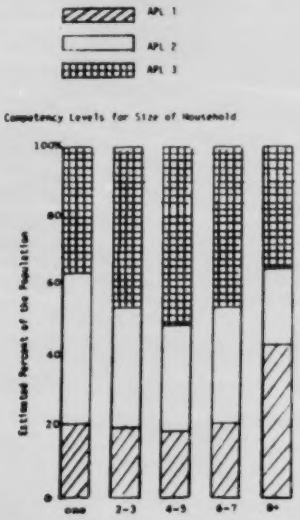
found among minority groups in this country.

FIGURE 19



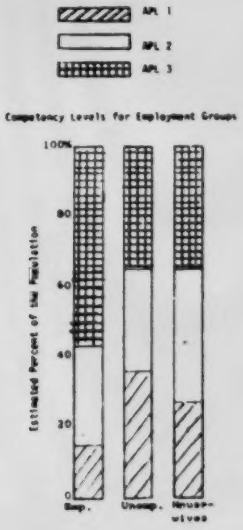
With respect to metropolitan areas, the rural areas have the greatest estimated percentage of APL 1's (27%) with cities over one million and suburbs slightly less (about 21%), and cities under one million and urban areas having the least percentage of APL 1's.

FIGURE 20



With regard to the number of people in the household, the only apparent difference in percentage of APL 1's occurred in households where more than seven people lived. While for most household populations, the percentage of functional incompetents is about 20%, for the eight or greater group, the percentage rises to 43%. Here the difference is probably due to the low income, education and job status level associated with large household.

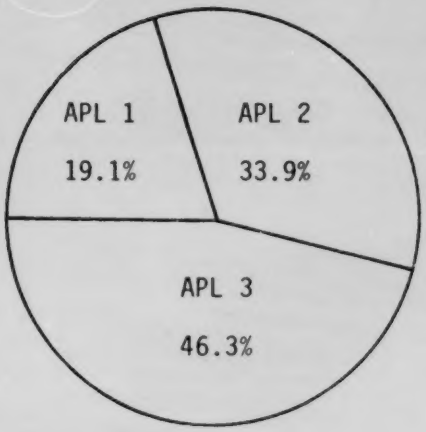
FIGURE 21



In relation to the employment groups, the employed showed a smaller percentage of APL 1's (15%) than did housewives (27%) who in turn showed a smaller percentage than did the unemployed (36%). Here, again, the differences in the "success" levels (i.e., amount of income, etc.) of especially the employed and unemployed may be used to explain the variations.

FIGURE 22

OVERALL APL LEVELS



Taking the U.S. population as a whole, approximately one-fifth of adults are estimated to be functionally incompetent. On the other hand, nearly one-half the population is predicted to be performing at a high level of competence. The remaining third of the adults are performing at a level which is associated with marginal success. Thus, although one-fifth of U.S. adults are predicted to be incompetent, just over one-half of the population is performing at a level associated with marginal success or below. How competent are we? The answer seems obvious.

IV. HOW DO WE MEET THE NEED?

The United States has been in a preeminent position of world power and influence for decades. Citizens of this country are justifiably proud of their country's accomplishments in industry, science, technology, the arts, and perhaps most of all, in their system of universal free public education. Millions of mothers and fathers have intuitively subscribed to that tenet of the American dream which holds that education is the major avenue to success for their daughters and sons. Accordingly, Americans are by many standards the best educated and the most affluent people on earth.

Concomitant with this historical emphasis upon education and its benefits is the popular conception that "illiteracy" is a problem unique to the economically underdeveloped nations -- the "Third World" countries. How could the United States, with its billions of dollars spent on education each year, have any significant literacy problem?

To be sure, we have been willing to commit a very small portion of our resources, private, state and federal, to literacy and related programs. The motivation behind this commitment is probably not due to a perception of a widespread need which is crucial to the well-being of our country. More likely, it is one of noblesse oblige. For the most part, ABE has been perceived as a peripheral enterprise with an extremely limited clientele. After all, if only a minute fraction of the population is "illiterate", there can be no justification for spending more than a minute fraction of the nations' resources toward eliminating the problem.

As long as "literacy" is conceived to be nothing more than the ability to read and write one's name, or to score at some low grade level on a standardized test developed for children, then the United States probably does not

have a significant problem. On the other hand, if the concern is with the adult who does not possess those skills and knowledges which are requisite to adult competence, then the results of the APL research suggest that there is, indeed, a widespread discrepancy in our adult population between what is required of them and what they achieve. It is surprising, perhaps even shocking, to suggest that approximately one of five Americans are functionally incompetent and that about half of the adult population possess functional competencies which are associated with at best only marginal levels of success.

The rest of this section deals with other implications and possible methods of implementation or dissemination. Because the original focus of the APL project was the ABE system, more attention will be given to that enterprise than to other educational systems. There are, however, implications for elementary and secondary education, which will also be presented.

Implications for Adult and Adult Basic Education

Let us summarize the products of the APL project to date. Essentially, the APL project was given the charge of specifying those competencies which are functional to adult life, with the implication that these competencies would become the core of objectives for ABE. Specifically, the APL project has accomplished the following tasks:

1. Developed and validated a series of objectives which comprise adult functional competency.
2. Conducted a series of national assessments of performance of adults with respect to these objectives.
3. Created, as a by-product of the research, a prototype test of adult functional competency.

The discussion which follows describes some activities or products which are indicated for ABE at four operational levels: the classroom or

instructional level, the local program level, the state level, and the federal or national level.

--- At the CLASSROOM LEVEL (Teacher-student)

1. Curriculum based on APL objectives. Obviously, the APL objectives form the core around which ABE curriculum may be constructed. The form which these curricula might take could and probably will be quite varied in order to meet local requirements. As mentioned earlier, several major curriculum development efforts are already underway.

2. Diagnostic, placement, and assessment devices. The APL study has built a solid research base for developing measures of overall student progress, pacing measures, such as curriculum-embedded tests, and devices used for placement or diagnosis.

--- At the LOCAL PROGRAM LEVEL (Local Program Director)

1. Guidelines for program objectives. Much curriculum development work in ABE is conducted at this level. The APL objectives form a valuable set of guidelines for developing local curricula.

2. Local program effectiveness assessment. Because of the ambiguity regarding the instructional goals of ABE, local programs have traditionally had difficulty in documenting or measuring progress. Since the APL research has specified objectives and suggested ways of measuring behavior related to these objectives, an opportunity exists for local programs to meaningfully assess their effectiveness.

3. Staff Development. Any APL curriculum effort will require extensive training and development of local staff. For more details, see "Staff Development" under the State Level.

--- At the STATE LEVEL (State Director of ABE and other concerned State Officials)

1. State guidelines or foci for instructional objectives. Since education is properly a function of the state, the state department of education in the form of the state director of adult education and his or her staff have an opportunity to take the leadership in providing comprehensive programs dealing with basic education for adult life. With appropriate input from other state agencies, state level officials can provide guidelines and direct resources to develop instructional programs which address the functional competencies identified by the APL project.

2. Statewide instructional effectiveness assessment. States have traditionally experienced difficulty in collecting evidence regarding the effectiveness of their programs. APL objectives and data can form a base upon which to meaningfully document statewide programmatic progress, as well as to provide a framework for reporting to the federal level.

Related to the function of assessing instructional effectiveness is the possibility of conducting statewide competency assessments. Even though national levels of performance are known, APL surveys do not provide enough precision to describe a particular state. Since states are bound to differ with respect to performance on different APL objectives, conducting state assessments of adult competence could provide extremely valuable data for planning programs.

3. Staff Development. Preliminary experience with curricula designed around APL objectives indicates that teachers will require significant retraining in order to function effectively in providing basic education for adult life. Those efforts which are now underway utilize the teacher more as an instructional manager and resource person rather than the traditional

role of lecturer and imparter of knowledge. Furthermore, there are strong suggestions that future APL-based curricula will require fulltime, highly trained teachers. These requirements certainly have implications for staff development and for teacher certification, which are primary concerns of the state director.

--- At the NATIONAL LEVEL (OE)

1. National Dissemination of APL objectives. Although the office of education is clearly not in the business of setting national educational standards, there is nevertheless the opportunity to provide leadership which can come only from this level in disseminating the objectives as suggested foci for programs dealing with undereducated adults. The Office of Education, working with a variety of state agencies and other federal agencies, can have a major impact on educational practices at every level insuring that the results of the study and its implications for practice are well known throughout the educational and social service communities.

2. National Dissemination of APL Data. The Office of Education now has at its command a process which can meaningfully describe the level of competency of the adult population of the U.S. For reasons similar to those described above, the Office of Education has an opportunity to provide guidance, leadership, and assistance to states which it never had before. The ways in which this process can be used are numerous: Assessing the effectiveness of federally funded programs, developing more useful reporting procedures, and maintaining a continuous assessment of national literacy levels over time are only a few of them.

Implications for Elementary and Secondary Education

The astute reader will have perceived by now that (assuming the research

is any good) the implications of APL research are by no means confined to adult or adult basic education. If it is true that a significant proportion of Americans do not possess important skills and competencies, it is patently wasteful of human and financial resources to wait until persons reach adulthood to begin to address those needs.

When one examines the APL objectives, it is interesting to compare the competencies described in the APL objectives to the curricular offerings typically found in elementary and secondary education. A brief examination will quickly reveal that, although many of them are indirectly addressed, not much of the typical school day is spent in focus on the objectives per se. This is not to indict the elementary and secondary systems -- too much of that has occurred already. The findings do suggest, however, that to the extent that producing functionally competent adults is an important goal of elementary and secondary education, state and local education agencies would do well to examine the functional competencies vis-a-vis their curricula and state re-requirements for high school completion.

Some states, notably Oregon, have already begun requiring students to complete a series of adult life-related performance tasks before awarding certification of high school completion. This is the kind of practice which seems to be entirely consonant with the APL findings.

To Summarize

Because of precedent and tradition, "literacy" is a static, low-level concept which is largely unrelated to the pragmatic requirements for adult life in this country. Using the term "functional competence", the APL project has developed a research process which has identified competencies which are important to success as adults. Using an assessment method which stems

from viewing functional competence as a function of individual capabilities and societal requirements, the APL project has produced data which suggest that, contrary to popular belief, many adults do not have that basic education for living which is indicated for even minimal levels of success. These results, and the objectives upon which they are based, can have profound implications for educational practice, and form a base of information and evidence which can be used to make different educational systems more responsive to the needs of both their clients and society.

INTRODUCTION

In 1971, the United States Office of Education awarded a grant to the Texas Education Agency to conduct a study of adult literacy in the United States. The Agency, in turn, subcontracted the major portion of the work to the staff of what is now the Division of Continuing Education of The University of Texas at Austin. The resultant four-year study into the scope and nature of adult literacy was called the Adult Performance Level Research Project.

Although we have titled this publication "Final Report," much of the work is just beginning. It is true that the major research phase has ended, but the task of designing and implementing program models geared to the results of that initial study, and of exploring new application for the knowledge gained, is in its inception.

More than 120 adult education projects across the nation are dealing with Adult Performance Level and/or Competency-based Adult Education. We are pioneering the use of APL materials in support of vocational education systems, and we are demonstrating the applicability of the Competency-based Diploma for adults engaged in programs under the Comprehensive Employment and Training Act (CETA). Through our efforts in behalf of the National Diffusion Network, we are assisting adopters in numerous states in the implementation of the APL materials and system. Under an agreement with Harcourt Brace Jovanovich, Inc., our APL curriculum materials will be published and on the market next year, and we feel that new applications for the work have just begun to surface.

The Adult Performance Level Project at The University of Texas will continue its efforts in curriculum development, competency-based high school diploma programs for adults, counseling and assessment centers for adult learners, and staff development and technical assistance in an effort to assist in the enrichment and expansion of innovative educational services to the nation's adults.

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APPENDICES

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2. Northcutt, Norvell et al. The Adult Performance Level Study: A Research Project for the Development of Performance Levels from Pragmatic Adult Literacy Objectives. Division of Extension, The University of Texas at Austin, January, 1973.

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A NOTE CONCERNING APL GOALS, OBJECTIVES, AND TASKS

Attached is the current version of the APL description of competency. This description is organized by general knowledge area. Within each general knowledge area, requirements are described in three successive levels of detail.

The first level is a goal statement, which is a broad description of the capability which the functionally competent adult should possess for that particular general knowledge area.

The goal statement is defined by a series of intermediate-level requirements called objectives. The objective is the fundamental building block of the APL description of competency. Some degree of mastery of these objectives, the degree depending on the adult's individual milieu, is required for true functional competency.

Each objective, in turn, is described by a series of situation-specific requirements called tasks. Mastery of an objective is manifested by the individual adult's ability to perform a group of tasks -- to respond appropriately to specific situations which reflect the requirements of the objective. Since the tasks are currently undergoing a thorough revision, only the goals and objectives are included in this presentation.

The implications of this caveat concerning the APL tasks become especially important when one attempts to translate the APL description of competency into curriculum or other training programs for undereducated adults. When used for this purpose, tasks should be considered as paradigms or general guidelines. They should not be interpreted as being ingraved in stone, because it is the objective that is the most important element in the requirements for functional competency.

OBJECTIVES FOR FUNCTIONAL COMPETENCY

OCCUPATIONAL KNOWLEDGE

GOAL: TO DEVELOP A LEVEL OF OCCUPATIONAL KNOWLEDGE WHICH WILL ENABLE ADULTS TO SECURE EMPLOYMENT IN ACCORDANCE WITH THEIR INDIVIDUAL NEEDS AND INTERESTS.

1. OBJECTIVE: To build an oral and written vocabulary related to occupational knowledge.

2. OBJECTIVE: To identify sources of information (e.g., radio broadcasts, newspapers, etc.) which may lead to employment.

3. OBJECTIVE: To define occupational categories in terms of the education and job experience required, and to know minimum requirements of given occupations.

4. OBJECTIVE: To be aware of vocational testing and counseling methods which help prospective employees recognize job interests and qualifications.

5. OBJECTIVE: To understand the differences among commerical employment agencies, government employment agencies and private employers.

6. OBJECTIVE: To prepare for job applications and interviews.

7. OBJECTIVE: To know standards of behavior for various types of employment.

8. OBJECTIVE: To know attributes and skills which may lead to promotion.

9. OBJECTIVE: To know the financial and legal aspects of employment.

10. OBJECTIVE: To understand aspects of employment other than financial which would affect the individual's satisfaction with a job.

CONSUMER ECONOMICS

GOAL: TO MANAGE A FAMILY ECONOMY AND TO DEMONSTRATE AN AWARENESS OF SOUND PURCHASING PRINCIPLES.

1. OBJECTIVE: To build an oral and written consumer economics vocabulary. This should be an ongoing process through each objective.

2. OBJECTIVE: To be able to count and convert coins and currency, and to convert weights and measures using measurement tables and mathematical operations.

3. OBJECTIVE: To understand the concepts of sales tax and income tax.

4. OBJECTIVE: To be aware of the basic principles of money management, including knowing the basics of consumer decision-making.

5. OBJECTIVE: To use catalogs, consumer guides and other reference documents to select goods and services.

6. OBJECTIVE: To be aware of factors that affect costs of goods and services and to determine the most economical places to shop.

7. OBJECTIVE: To be aware of the principles of comparison shopping, and to be aware of the relationship of price to quality among brand names, and between "firsts" and "seconds" and to be able to substitute economy for quality according to individual needs.

8. OBJECTIVE: To know the various methods by which goods are packaged and to know which methods are most cost-effective in terms of quality and storage.

9. OBJECTIVE: To be able to take advantage of sales by knowing where to find them, by planning for their eventuality, and by being able to determine which are of worthwhile value to the individual.

10. OBJECTIVE: To be aware of advertising techniques and to recognize appropriate and inappropriate forms of selling and advertising.

11. OBJECTIVE: To know how to order food and to tip in a restaurant.

12. OBJECTIVE: To be aware of different stores where home furnishings can be purchased and to determine the best buys for essential and luxury items based on individual needs and resources.

13. OBJECTIVE: To determine housing needs and to know how to obtain housing and utilities based on those needs.

14. OBJECTIVE: To know how to buy and maintain a car economically.

15. OBJECTIVE: To know basic procedures for the care and upkeep of personal possessions (home, furniture, car, clothing, etc.) and to be able to use resources relating to such care.

16. OBJECTIVE: To know the various media of exchange and to be familiar with banking services in the community.

17. OBJECTIVE: To develop understanding of credit systems.

18. OBJECTIVE: To collect information concerning the types of insurance available and to be able to select the best insurance for the individual and his family.

19. OBJECTIVE: To know the recourses available to the consumer in the face of misleading and/or fraudulent product/service claims or tactics.

20. OBJECTIVE: To understand the implication of consumption vis-a-vis finite world resources and to recognize that each individual's pattern of consumption influences the general welfare.

HEALTH

GOAL: TO INSURE GOOD MENTAL AND PHYSICAL HEALTH FOR THE INDIVIDUAL AND HIS FAMILY.

1. OBJECTIVE: To develop a working vocabulary related to health, especially as it relates to basic medical and physiological terminology, for accurate reporting of symptoms and following a doctor's directions in applying treatments.

2. OBJECTIVE: To understand how basic safety measures can prevent accidents and injuries and to recognize potential hazards, especially as such hazards relate to home and occupational safety.

3. OBJECTIVE:To know medical and health services in the community.

4. OBJECTIVE: To understand the physical and psychological influences on pregnancy as well as the need for proper prenatal care.

5. OBJECTIVE: To understand the importance of family planning, its physical, psychological, financial and religious implications, and to have knowledge of both effective and ineffective methods of birth control.

6.OBJECTIVE: To understand general child rearing practices and procedures for guarding the health and safety of a child and to apply proper action in accordance with needs and resources.

7. OBJECTIVE: To understand the special health needs and concerns of the adolescent (and his parents) and to become acquainted with some ways to ease the transition from childhood to adulthood.

8. OBJECTIVE: To understand what contributes to good mental health and physical health and to apply this understanding toward preventive care and health maintenance.

9. OBJECTIVE: To understand the interaction of self as a member of small groups (family, work, club, class) and to use this understanding to promote effective interpersonal coping skills.

10. OBJECTIVE: To be able to apply first aid in emergencies and to inform proper authorities of sudden illnesses, various accidents or natural disasters.

11. OBJECTIVE: To plan for health or medical insurance and to be aware of available financial assistance for medical or health problems.

12. OBJECTIVE: To understand what constitutes a proper diet and to plan meals according to individual needs and resources.

13. OBJECTIVE: To understand federal control of various drugs and items for health protection and to understand how public reaction influences this control.

GOVERNMENT AND LAW

GOAL: TO PROMOTE AN UNDERSTANDING OF SOCIETY THROUGH GOVERNMENT AND LAW AND TO BE AWARE OF GOVERNMENTAL FUNCTIONS, AGENCIES AND REGULATIONS WHICH DEFINE INDIVIDUAL RIGHTS AND OBLIGATIONS.

1. OBJECTIVE: To develop a working vocabulary related to government and law in order to understand their functions in society and in the personal life of the individual. This should be an ongoing process as each objective is covered.

2. OBJECTIVE: To develop an understanding of the structure and functioning of the federal government.

3. OBJECTIVE: To investigate the relationship between the individual citizen and the government.

4. OBJECTIVE: To understand the relationship between the individual and the legal system.

5. OBJECTIVE: To obtain a working knowledge of the various legal documents which the individual will need as a member of society.

6. OBJECTIVE: To explore the relationship between government services and the American tax system.

COMMUNITY RESOURCES

GOAL: TO UNDERSTAND THAT COMMUNITY RESOURCES, INCLUDING TRANSPORTATION SYSTEMS ARE UTILIZED BY INDIVIDUALS IN SOCIETY IN ORDER TO OBTAIN A SATISFACTORY MODE OF LIVING.

1. OBJECTIVE: To build an oral and written vocabulary pertaining to community resources and to define community resources in terms of (a) services to community members and (b) services to persons outside the community or non-self-supporting members of society (unemployed, criminals, insane, etc.)

2-3. OBJECTIVE: To know the types of community services provided for members of society including the purposes of and how to gain access to these services.

4. OBJECTIVE: To understand how and when to apply for community services, such as Social Security, and Medicare.

5. OBJECTIVE: To know various recreational services available in the community.

6. OBJECTIVE: To be able to utilize information services of the community.

7. OBJECTIVE: To be aware of the people and agencies in the community whose job it is to register and act upon citizen complaints.

SUBSET: TRANSPORTATION

8. OBJECTIVE: To build an oral and written vocabulary of transportation terms, including car insurance terms.

9. OBJECTIVE: To be able to recognize and utilize signs related to transportation needs.

10. OBJECTIVE: To develop a familiarity with transportation schedules, and to calculate fares.

11. OBJECTIVE: To be able to find and utilize information facilities.

12. OBJECTIVE: To learn the use of maps relating to travel needs.

13. OBJECTIVE: To recognize time zone boundaries and understand the concept of daylight savings time.

14. OBJECTIVE: To request information on and make verbal and written travel and overnight accomodations/reservations.

15. OBJECTIVE: To understand the relationship between transportation and public problems.

16. OBJECTIVE: To understand driving regulations, including safety, courtesy, and rules such as having a driver's license, car license plates, etc.

INTRODUCTION

About the Study

This report documents a study sponsored by the Division of Extension, The University of Texas at Austin, under a grant from the United States Office of Education. The University of Texas contracted with Opinion Research Corporation (ORC) to act as data collection agent for the study.

The purpose of the survey is to define and assess those skills identified as being important for survival in our society. In order to be successful, an adult must achieve a minimum level of competency within each of at least six substantive areas: occupational knowledge, consumer economics, health, community resources, government and law, and transportation.

Tests covering the six areas were administered in 1973 and 1974 to nationwide probability samples of adults 18 through 65 years. Test results and documentations were presented to the University of Texas in March and July 1974.

The study documented herein is a composite of the six areas. The Division of Extension selected 42 items from the earlier tests which were discriminative and assessed four skill areas -- reading, writing, computation, and problem solving.

The Role of ORC

Working with the selected test items, ORC formatted and printed field materials for administration of the tests to a nationwide sample of adults, in a personal interview situation.

Using ORC's Master Sample, testing was conducted with a probability sample containing over 1,500 adults, representative of the population 18 through 65 years of age in the coterminous United States. All tests were conducted in the homes of respondents.

ORC prepared instructions for interviewers, supervised the field work, edited the correctness of respondents' performance on a number of tasks called for in the test, and reproduced results on punch cards. Results were also presented in computer print-out form, cross-tabulated by demographics.

Testing Dates

Testing was conducted during the period October 7-26, 1974.

SAMPLE DESIGN

Description of the Master Sample

The ORC Master Probability Sample is designed to represent the continental United States, excluding Alaska and Hawaii.

In its basic design, the sample consists of 360 counties, arranged in six "blocks" of 60 counties each. Each of the six blocks is an independent subsample representing the United States. The counties making up each block were chosen at random with probability proportional to size of population from the 3,070 counties that made up the nation at the time the sample was drawn.

Prior to the selection of sample counties, geographical stratification was introduced. All 3,070 counties were grouped into 171 areas of contiguous counties, as designated by the Office of Business Economics of the U.S. Department of Commerce. The 171 area groupings were then arranged in geographical order from north and east to south and west -- from Maine to California -- and within each area the counties were arranged in descending order of population.

Within the resulting array, the 60 individual sample counties making up each block were selected by systematic methods, with random start points, to insure representative geographical distribution. The process was carried out six times to provide the six blocks that make up the entire master sample. The selections were made and documented, on an IBM 360/65 digital computer.

It will be noted that in this process the sampling unit is a county, and that a given county may appear in the sample more than once, either because of its large population or because it was selected by chance in more than one of the six blocks.

The sample is updated annually to reflect changes in population. The latest updating reflects 1973 population estimates.

The sample has a number of desirable properties:

1. It can be used as a whole, or subsamples can be taken by choosing any one or any combination of the six blocks into which the master sample is divided. Each of the six blocks is itself a national probability sample. Such subsamples are mutually consistent, and can be added or compared. This layout for the master sample provides flexibility in size, so that sample size in each instance can be varied to suit the need for precision of any particular research inquiry.

2. The whole sampling method is both statistically and administratively of maximum efficiency. Its intent is to provide the most reliable data from any given expenditure.

3. The sample is fully documented, and reproducible in a scientific sense. It can be updated in a straightforward way, easily and logically, as the population changes with time.

Within each county a minor civil division was selected, with probability proportionate to size, and defined to be the primary sampling unit.

Within the primary sampling unit, the procedure consists of selecting a listed household as a starting point, using random techniques. Non-overlapping telephone directories are used for locating these starting points. The interviewer begins her assignment at the household immediately to the left of the randomly selected one.

Each starting point effectively determines a neighborhood in which interviewing will be conducted. Since there is local variation in the incidence of listed households, weighting is introduced to equalize the probabilities of selecting starting points.

Note that, although telephone directories are used to locate starting points in the field interviewing, the sample is in no sense a sample of telephone-owning households. Nontelephone households are included in their correct proportions, and the sample is properly representative of all segments of the United States population.

Application of the Master Sample in the Current Study

The universe for the test administration was defined as the nationwide population 18 through 65 years of age, living in households.

Three blocks of the master sample, 60 locations in each, were employed in the study.

In each location, a fixed number of housing units were assigned for contact, beginning at the housing unit adjacent to the starting point and continuing on a fixed route.

Within households, respondents were selected for testing following probability sampling procedures.

Up to two calls were made at each household, where necessary, to complete the test with the designated respondent.

At the conclusion of the test, respondents were asked the likelihood of their being away from home at the time of the interviewer's visit. This information provided input for a weighting procedure that corrects for "at-homeness."

Weighting

Weighting was introduced to correct for:

local variation in the incidence of telephone listed households;

different probabilities of selecting respondents in households with varying numbers of eligible respondents;

the probability of a respondent's being at home at the time of the interviewer's visit;

varying completion rates in different subgroups of the population.

Sample Composition

Following are the characteristics of the weighted sample compared with ORC estimates of the universe represented by the sample. Universe estimates are based on most recent U.S. Census data.

	Universe	Weighted Sample
Men	48%	45%
Women	52%	55%
18-29 years	34%	35%
30-39	20	20
40-49	19	17
50-59	18	18
60-65	9	10
Education:		
Less than high school complete	34%	33%
High School complete	40	40
Some college	26	26
Metropolitan areas	73%	73%
Nonmetropolitan	27	27
Northeast	25%	24%
North Central	27	28
South	31	31
West	17	17
Family income:		
Less than $5,000	19%	17%
$5,000 - $6,999	10	9
$7,000 - $9,999	15	15
$10,000 - $14,999	24	24
$15,000 or more	32	31
White	88%	87%
Nonwhite	12	13

MATERIALS PREPARATION

Field materials are appended at the back of this report. The test called for use of:

> Questionnaires for the interviewers to record respondents' answers, and their scores on specific tasks. (For those tasks that required respondents to give written answers, the questionnaires were given to the respondents.)
>
> A booklet for the respondents to follow as the interviewers read the question.

In addition, General Instructions for Interviewers and the letters of introduction that interviewers carried are appended.

In planning the order of questions in the test, p-values from the earlier tests were used to define difficulty -- the order progressed from easiest to most difficult.

In general, there were three kinds of questions asked in the tests:

1. Multiple choice;
2. "Open" question, where respondent was asked to arrive at the answer -- e.g., an arithmetic computation;
3. Tasks -- e.g., writing a note to a teacher.

The average length of test was 60 minutes.

RETURNS PROCESSING

As questionnaires were received from the field, they were serialized in the ORC Coding Department. Test items that called for written answers were scored, following scoring rules shown below.

Occupations of respondents and chief wage earners were coded, following the U.S. Census code.

All data were punched into IBM cards. These were cleaned following an ORC-developed cleaning program.

Scoring Rules

For all items, a "space" is used for nonresponse.

See questionnaire for response codes assigned to multiple choice items. Where multiple answers occur in multiple choice items, the code number used is the next digit after the last assigned digit. (For analysis using Bayesian statistics, a special tape has been prepared on which the correct response for any item is coded "1.")

For items other than multiple choice, a correct answer is scored "1"; an incorrect answer, "0."

Following are scoring procedures established for "task" questions:

Question 4, Sample check

Part 1 - amount in digits

Part 2 - amount written — Dollar amount must be written out. Accept:

"eight dollars sixteen cents"
"eight dollars and sixteen cents"
"eight and sixteen hundredths"
"eight 16/"

Part 3 - signature — Accept:

respondent's own signature
the word "signature"
misspelled signature

Reject:

"Mrs." preceding signature
printed signature, unless respondent's normal handwriting is print

Part 4 - will it clear? Must have a date, a payee, an amount in at least one place, a signature.

Accept:

if amounts do not agree
if signature is correct, following rules for part 3
"cash" for the payee

Reject:

"4" instead of "74"
payee's name crossed out and another name entered

Question 5, Letter to U.S. Representative

Part 1 - H. of R. will vote on "H.B. 74-891" or "a bill to reduce the amount of social security paid to women" or similar description

Part 2 - I urge you to "vote against the bill" or words to this effect

Accept:

"veto"
"vote no"

Question 6, Envelope

Part 1 - Return address. Score correct if there is sufficient information for the letter to be returned to sender.

Accept:

address with no zip code
Jack Youngtree omitted

Part 2 - Address. Score correct if there is sufficient information for the letter to be delivered to Sam Wood.

Accept:

address with no zip code
addressed to Editor, Sam Wood omitted
Blahtown News ("Daily" omitted)

Reject:

name of paper omitted

Question 21, Note to teacher

Part 1 - Salutation

Accept:

Mrs. Drake
Dear Mrs. Drake
Dear Teacher
Teacher

Part 2 - Message. "Please excuse" or "excuse," stated or implied

Accept:

"Tim was sick"

Part 3 - who is to be excused? Tim or Tim Brown

Accept:

Tom
son

Part 4 - Signature. Mrs. Brown or Mr. Brown

Accept:

Mrs. Tim Brown
Mr. Tim Brown
Mr. Tim Brown, Sr.
Susan Brown
Tim's mother
Respondent's own signature
"Signature"

Question 22, Social Security application

Part 1 - Jane's name. Jane D. (or Diamond) Hughes

Accept:
Printed or written entries

Part 2 - Enter age "18"

On parts 1, 3 and 4, if last name is misspelled, then score incorrect.

Part 3 - Mother's name. Mary Jane Davidson

Part 4 - Father's name. John Blair Diamond

Part 5 - Ever applied? "X" or " " in "no" box

Note that on one questionnaire the name "Hughes" was added to the second line. Since line 2 was not part of the task, this error did not have any effect on the scoring.

Question 38, Deposit slip.

Correct if three amounts ($7.00, 13.49 and 20.49) appear on proper lines. If any are missing, score incorrect.

Accept if check entry appears on any of the five lines provided for checks.

Question 39, Rights when arrested

To be correct, the whole paragraph starting "No one has a right ..." or the sentence starting "No promise made ..." must be marked

If two passages are underlined and one is correct, accept the task as correct. But incorrect if entire statement is underlined.

Passage may be checked, underlined or otherwise marked.

Question 40, Complaint form

Part 1 - "Joe LeBlanc" entered as complainant

Part 2 - "State Highway Department" entered as respondent

Accept:

State of Idaho
Highway Department

Part 3 - "discharge" box checked or x'd and no other boxes marked in any way

Part 4 - Joe LeBlanc's signature entered on line "signature of complainant."

Accept:

Respondent's own signature
"x"
The word "signature"

Reject:

Tom Allen

Question 41, Income tax form

Seven parts, one each for entries on lines 10, 18, 20, 22, 28, 29, 30

Accept:

If no entries for cents Line 28 may be all 0's or a space or dash. But if line 28 is blank and evidence is that respondent did not get this far, then score this as no response.

Quartile Scores

For the purposes of initial analysis, respondents were grouped into quartiles. In the scoring, respondents who refused to attempt the task that called for completion of an income tax form (question 41) were defined as "unscorable."

Cutting points for the quartiles are:

	Number of Correct Items
First quartile	0-48
Second quartile	49-54
Third quartile	55-59
Fourth quartile	60-68

At the conclusion of card cleaning and scoring, detailed tabulations of each question's results by demographics were printed out by computer.

Cards were then read onto magnetic tape.

51267

B12

FACE SHEET

LINE NUMBER: _____
(from Housing Unit Listing Sheet)

Location #: _____

1. Address of Housing Unit:
(Give apartment number, floor or other description if necessary.)

_____

_____

_____

2. Adults (18 through 65) in household:
(List all men first, oldest to youngest; then all women oldest to youngest. Use relationship to male head of house; e.g. son, boarder, wife, etc.)

Resident Number	Relationship	Age
1		
2		
3		
4		
5		
6 or more		

3. Whom to interview: Refer to the RESPONDENT SELECTION CARD to determine from the Selection Table WHOM TO INTERVIEW. →

INTERVIEWER: FILL IN INFORMATION BELOW:

Total # of residents listed above: _____

Interview Resident #: _____

4. Is there a telephone in your household that is listed in the current phone books or will be listed in the next phone book?

1 YES
2 NO

Reason for noninterview (mark one box):

☐ Refused
☐ Not at home
☐ Ill
☐ Cannot speak English
[redacted]
☐ Other _____ (Specify)

A BAYESIAN SCORING PROCESS FOR APL TEST ITEMS

Introduction

In order to explain how Bayes' Theorem is applicable to the APL project, we will draw an analogy from a simple probability problem to the APL research design. Consider a situation in which there are 1000 urns, all identical in appearance. Each urn has ten balls inside it, some of which are red, and some of which are black. There are two types of urns, which we choose to call $\emptyset_1$ and $\emptyset_2$. $\emptyset_1$ urns have 6 red and 4 black balls, and $\emptyset_2$ urns have 9 red and 1 black ball inside them. The urns are opaque, so it is impossible to see the balls inside each urn. Finally, there are 800 urns of type $\emptyset_1$ and 200 of type $\emptyset_2$.

If a ball is picked at random from an urn also picked at random, and the color of the ball is noted, can any prediction be made about the type of urn from which the ball was selected? Bayes' Theorem allows us to make such a prediction. For the purposes of this problem, the theorem may be stated as follows: If we draw a red ball,

$$P(\emptyset_1/R) = \frac{P(R/\emptyset_1)P(\emptyset_1)}{P(R/\emptyset_1)P(\emptyset_1) + P(R/\emptyset_2)P(\emptyset_2)}$$

$$\text{and } P(\emptyset_2/R) = 1 - P(\emptyset_1/R).$$

Similar equations result if a black ball is drawn.

Since the four conditional probabilities are known, and since the probability of encountering either of the two types of urns is also known, the following set of conditional probabilities can be calculated by use of Bayes' Theorem:

$P(\emptyset_1/R) = .75$

$P(\emptyset_2/R) = .25$

$P(\emptyset_1/B) = .94$

$P(\emptyset_2/B) = .06$

That is, on any given draw, if a red ball is drawn, there are 75 chances out of 100 that it came from a $\emptyset_1$ urn and 25 chances that it came from a $\emptyset_2$ urn. Likewise, if a black ball is drawn, there are 94 chances in 100 that it came from a $\emptyset_1$ urn, and only 6 chances that it was drawn from a $\emptyset_2$ urn.

Use of Bayes' Theorem in Sampling

Although the preceding game is interesting, we must modify it slightly to introduce a little more verisimilitude. Suppose we have the same 1000 urns of the same types as described. But also suppose that we now have no knowledge at all about the relative frequency of the two types of urns. Bayes' Theorem, in conjunction with rudimentary sampling theory, can be used to estimate the proportion of the two types of urns in the population. We simply make a series of observations by drawing a ball out of a series of urns at random, and use the theorem to successively "update" the estimates. For example, if ten observations led to the series R, B, R, R, B, R, R, B, R, R, then the results are as follows, using an original hypothesis of (.5, .5):

Observation	Bayes' Estimate of $P(\emptyset_1)$, $P(\emptyset_2)$
1. R	(.4, .6)
2. B	(.73, .27)
3. R	(.64,.36)
4. R	(.54, .45)
5. B	(.83, .17)

6. R	(.76, .24)
7. R	(.68, .32)
8. B	(.89, .11)
9. R	(.85, .15)
10. R	(.79, .21)

Notice that, after 10 observations, the Bayesian estimate is 79% $\emptyset_1$ urns and 21% $\emptyset_2$ urns, which is quite close to the true figures of 80% and 20%.

The APL project as an Application of Bayesian Statistics

Hopefully, the analogy between the urn problem and the objectives of the APL project are apparent. Bayes' Theorem, for purposes of the study, can be rewritten as follows:

Let $P_n = \begin{bmatrix} p_{n1} \\ p_{n2} \\ p_{n3} \end{bmatrix}$, which contains the posterior probability estimates for each of the three levels of competency.

$P_m = \begin{bmatrix} p_{m1} \\ p_{m2} \\ p_{m3} \end{bmatrix}$, which contains the prior probability estimates for each of the three levels of competency.

$C_n = \begin{bmatrix} c_{n1} \\ c_{n2} \\ c_{n3} \end{bmatrix}$, which contains the conditional probabilities for the corresponding elements of P_n.

Then $P_n = \frac{P_m * C_n}{C'_n P_m}$

where $P_m * C_n$ is the direct product vector of P_m and C_n and C_n^1 is the transpose of C_n.

We propose to place each adult in one of three "urns", which are the different levels of competency. To estimate the proportion of the population which each "urn" accounts for, we will use the APL definition of adult functional competency and the accompanying performance indicators. The performance on each item is analagous to the observation of the color of the drawn ball: just as the balls were either red or black, the APL performance indicators are either right or wrong. We will therefore "successively" sample competency behavior on an item-by-item basis, and use the conditional probabilities derived from the national sample in each general knowledge area to successively update the estimate for each of the levels of competency. This process will enable us to meaningfully describe each level in terms of its behavior, and to estimate the proportion of the adult population which comprises each level.

Adult Education

Development Center

for Texas

ANNUAL REPORT

for

1975-76 Fiscal Year

BACKGROUND:

The Adult Education Development Center for Texas was funded by the Adult and Continuing Education Division of the Texas Education Agency for the first time under this project title during the 1975-76 fiscal year. In actuality many of the designated Center activities were continuations of federal and state projects initiated in prior years, and scheduled for completion at varying future dates. Rationale for such a consolidation of projects was to focus the combined efforts of a highly trained and experienced U.T. staff toward determining priorities and facilitating the accomplishment of project objectives.

That combination of activities and efforts has worked well. Personnel were shifted freely as the need arose. Group "think tank" tactics applied to the resolution of problems resulted in better and more workable solutions. The APL Project staff has been involved in many seminars, workshops and awareness presentations, both statewide and nationwide.

Early in the project year a mutual decision, by TEA and U.T. staff as well as field pilot project staff, was made to change the title of the External High School Diploma Program to the Competency-based High School Diploma Program. Subsequent operational references to the program in this report will use the new title.

PROJECT ACTIVITIES:

In reporting on Center activities directed toward accomplishment of project objectives for fiscal year 1975-76, it is convenient to rearrange these objectives in the order of how they relate to one another personnel wise. Coincidentally, this ordering of objectives also coincides with the order in which priorities were established.

Although listed in our project application as a separate project, rather than as a major objective of the Center for this period, one of the primary thrusts,

both in money and time expended, was the implementation and operation of a Competency-based High School Diploma Pilot Program. Therefore, this has been included for reporting purposes as Objective No. 2. Similarly, another designated project, the AE Volunteer Program, has been included as Objective No. 6.

Objective No. 1 - To design, develop and test curriculum in adult basic education (i.e., ESL, GED preparation, and EHSD Plan)

The first priority for the U.T. Curriculum Team during the months of July, August and September, 1975, was the editing, revising and printing of Scope and Sequences developed during the June Workshop at South Padre Island. The original thinking was, that given an organized set of structured and sequenced objectives, teachers in the pilot sites would seek out available materials (or prepare new materials if necessary) in the logical order of their need as they taught these objectives. Through a process of feedback to the U.T. Center, these teaching activities would then be organized and assembled into instructional modules by the U.T. Curriculum Team. During October and November, as the CBHSD Pilot Programs started to become operational, it became apparent that the pilot teachers, assigned to APL implementation only on a part-time basis, simply did not have the time to identify or design instructional materials. This determination then required a restructuring of operational procedures within the U.T. Center. Additional personnel were reassigned to full-time duty on the Curriculum Team. This Team then devoted its first efforts toward the development of a prototype instructional module. Designed and approved internally, this prototype was presented to pilot site teachers during a workshop on January 8-9, 1976.

Having received the endorsement of teachers who would be using the product, the Curriculum Team started module development. As a unit was developed, it was reproduced in sufficient quantity and distributed to pilot sites. As a result of field test response, a number of requested changes were incorporated into these and subsequent modules. A total of five modules were developed, field-tested and

revised through May, 1976. During this time a decision was made to hopefully speed up production by training a sizable number of experienced adult education teachers to develop APL Instructional Modules. A Module Development workshop for this purpose was conducted in Austin on April 5-6, 1976. With this pre-training session, it was envisioned that these teachers could move into a planned two-week summer curriculum development institute without further need for training.

This institute was held at Lago Vista World of Resorts Inn on June 7-18, 1976. Teachers were organized into 12 small groups of 3 to 4 members each, and assigned the responsibility of developing a module to teach a specific APL Objective. Three teams completed two modules during the session. Others finished to varying degrees of completeness their one assigned module. A total of 15 modules in some form of acceptability resulted from this effort. Subsequent experience with these Lago Vista modules indicates that it requires some 160 additional manhours per module of U.T. Curriculum Team time in order to get them ready for production.

Objective No. 2 - To design, develop and implement an External High School Diploma Program in selected Texas pilot program sites

A separate Annual Report on the Competency-Based High School Diploma Program was prepared for the Accreditation Division of the Texas Education Agency, and is included as Appendix A to this report.

Objective No. 3 - To design, develop and provide staff development (APL implementation)

In reporting on this objective, comments will be limited to staff development directed toward Texas pilot programs and regional and national APL implementation efforts.

A considerable amount of Curriculum Team time and energy was devoted to planning, designing, and developing materials necessary for staff development efforts, as well as conducting workshops throughout the year. Specific pilot site staff training workshops scheduled during this reporting period are itemized below:

September 15-17, Austin, Texas. Pre-service workshop for all implementers of Pilot Programs.

November 22, Houston, Texas. Special pre-implementation workshop for Harris County Pilot Site Implementers.

January 7-9, Austin, Texas. In-service workshop for pilot programs.

April 5-6, Austin, Texas. Teacher module development workshop and Pilot Programs workshop.

June 7-18, Lago Vista Curriculum Development Institute.

Many other training sessions for new Texas pilot site personnel were conducted in U.T. offices as necessary throughout the year.

The CBHSD Program Team was equally involved in planning, designing and developing staff development materials and conducting workshops for pilot site implementers. These were held concurrently with the curriculum workshops listed above.

In addition, many APL Curriculum and CBHSD presentations were made throughout the year for various adult education related meetings, organizations and state departments, as well as a number of local ABE Teacher In-service meetings.

As a part of Texas' contribution to a Region VI Staff Development Consortium, virtually every person connected with this Center made APL-related presentations in one or more of the other four states in Region VI during this fiscal year. Additionally, Center personnel conducted workshops or meetings in some 20 other states in the U.S., including Alaska and Puerto Rico. Travel expenses for all out-of-state trips were provided by the states involved, or were supported by Federal funds provided for APL dissemination to the APL Project during the first seven months of this fiscal period.

Objective No. 4 - To provide technical assistance to local and state programs when requested by TEA

Performance in this category is best represented by the Center's direct contact with potential and actual pilot sites. During the months of July, August,

September, October and November, 1975, 12 potential CBHSD Pilot Site School Districts throughout the state were visited. CBHSD program presentations were made, and interested sites were assisted in preparing applications to become pilot sites. Technical assistance in the actual operation of all aspects of the programs continued throughout the year. A telephone advisory service was maintained and used almost daily. Each pilot site was visited by U.T. Staff at least two times during the fiscal year.

Objective No. 5 - To perform research functions in the areas of adult and continuing education

Again, research functions within the Center during this period were restricted primarily to APL-related activities. A considerable amount of research was required in designing the prototype instructional module and in identifying and/or designing instructional materials. Research was utilized extensively in designing and developing the process and model for a competency-based high school diploma now being used in the Texas Pilot Program. Research was also involved in the design and plan for AE Volunteer Programs now being piloted in Texas.

Objective No. 6 - To design, develop and implement a system for utilizing volunteers in Adult Basic Education Programs in selected Texas Pilot Sites.

As in the case of Objective No. 2, a separate report has been prepared for this project.

Objective No. 7 - To design and develop an ongoing and continuous storage and retrieval system of current APL-related research studies and curriculum materials development activities as they are occuring in the U.S.

As more and more states and territories become involved in some sort of APL implementation, a centralized system for identifying, classifying, and disseminating research findings and developmental efforts is perceived as vital, in order to minimize duplication of efforts. This Center is the logical choice for designing such a system, since we are contacted by or involved in some way with virtually every

APL-related effort. However, this must be a low priority when compared to the preceding objectives. Consequently, very little effort has been expended toward designing such a system.

RECOMMENDATIONS:

It is recommended that the Adult Education Development Center for Texas Special Project be refunded for Fiscal Year 1976-77, and that the maximum efforts of the Center be directed toward the culmination of the following listed Goals and Objectives:

Goal A. The completion of all the components of an "Adult Performance Level Management/Instructional System." (A graphic model for this System is included as Appendix D.)

Objective 1A. To complete the development of Instructional Modules in all APL Knowledge Areas.

Objective 2A. To complete a diagnostic objective test for each instructional module as the modules are developed.

Objective 3A. To field test and revise as necessary the existing mastery tests for the 5 APL Knowledge Areas.

Objective 4A. To evaluate and select from one of several formats now in use in CBHSD Pilot Sites a model Student Profile Card for System record keeping purposes.

Goal B. Completion and Evaluation of the Texas Competency-Based High School Diploma Pilot Program Study.

Objective 1B. To institute the use of the new American College Testing Adult APL Survey into the CBHSD Program as the major diagnostic test instrument for determining student remedial requirements.

(Copyright laws dictate the necessity for this change. Initiation will require an in-service session with pilot site personnel, and comparative field

studies between the APL Short Form Test now being used and the ACT Adult APL Survey in order to establish correlations of APL Levels to ACT Test Scores.)

Objective 2B. To develop, field test and revise as necessary an "Operations Manual for Learning Consultants."

Objective 3B. To develop, field test and revise as necessary an "Operations Manual for Learning Resource Persons."

Objective 4B. To develop and field test a model for an operational "Assessment Center," designed to provide specialized assessment services to prospective new CBHSD programs. (A graphic model for such a center is included as Appendix E.)

Objective 5B. To design and implement a standardized reporting process for accumulating and reporting statistical information concerning students and graduates of the CBHSD Pilot Programs.

(For final program evaluation purposes standardized and detailed reporting of comparative student data is vitally necessary.)

Objective 6B. To complete a final revision of the CBHSD "Operations Manual" (to insure its suitability as a guide for implementing CBHSD programs Statewide).

Objective 7B. To provide continued staff development, technical assistance and evaluation activities to CBHSD Pilot Sites.

Goal C. The implementation and operation of a pilot program to introduce the use of the APL Instructional System into traditional ABE Programs.

Objective C1. To provide APL Instructional Materials and staff development services in the use of these materials to designated pilot site personnel who will be involved in APL/ABE Programs.

Objective C2. To provide continuing technical assistance and staff development services to APL/ABE Pilot Sites.

Goal D. To design and plan a process for delivering staff development services which would be required in order to expand the CBHSD and/or APL Instructional System Programs to other Adult Education Programs throughout the State.

Goal E. To continue the ABE-Volunteer Program with existing pilot sites, with special emphasis on revising and refining the system as experience dictates, and on providing technical field assistance as necessary.

In addition to the above goals and objectives, efforts should continue toward the accomplishment of the following objectives, as staff time will allow.

Objective 1F. To design and develop an ongoing and continuous storage and retrieval system of current APL-related research studies and curriculum materials development activities as they are occurring in the U.S.

Objective 2F. To establish a professional degree program in adult education at U.T. Austin, which will offer both a Masters and Doctoral level program.

Adult Performance Level

Competency-Based High School

Diploma Pilot Program

ANNUAL REPORT

for

1975-76 School Year

BACKGROUND: The Adult Performance Level Competency-Based High School Diploma Project in Texas is the logical out-growth of a federally funded Adult Performance Level Research Project conducted by the Extension Division of the University of Texas at Austin from 1971 through 1975. This study redefined adult literacy in terms of actual competencies performed in everyday life tasks, and conducted a national assessment of the adult population of the continental United States to determine how well adults are able to perform these life tasks. Results of this survey indicate that approximately 20% of our total adult population have less than minimal survival skills, and another approximately 30% have less than proficient survival skills. A Texas survey, funded jointly by the Texas Education Agency and the Texas State Manpower Services Council, was conducted concurrently with the national survey. Results were not significantly different than those from the national sample.

In the Fall of 1974, a TEA funded joint project between the University of Texas APL Staff and six adult education pilot sites in Texas was initiated to develop a new adult education curriculum to teach the functional competencies identified by APL research. The sites were selected to best represent the Texas ethnic population in both rural and urban settings. During curriculum field testing attempts, it became apparent that an alternative award system was needed to reward students for demonstrating proficiency in functional life-coping skills. A model for such a system, already successfully piloted in New York State, was revised to conform to the Texas Adult Education instructional program, and accepted by the Accreditation Division of the Texas Education Agency for approving pilot sites in Texas. This model included the issuance of regular high school diplomas for demonstrated proficiencies.

Eight school districts submitted applications and were approved by the Accreditation Division to pilot the APL Competency-Based High School Diploma Program (CBHSD) for the 1975-76 school year. Those sites approved, along with the months they started their programs, are listed on the next page:

Abilene ISD	October, 1975
Edgewood ISD	October, 1975
LaVega ISD	October, 1975
Windham Schools	October, 1975
Pasadena ISD	January, 1976
El Paso ISD	February, 1976
Point Isabel ISD	March, 1976
Post ISD	April, 1976

Because of the statewide involvement and potential implications for future change in Adult Education for Texas, an Advisory Council for the entire APL Project was organized. Members of this council were chosen from adult education adminstrative and teaching positions in the field, from institutions of higher learning, and from local and state manpower and vocational offices. The Council met three times during the last school year, and advised and helped to establish operational policies as the program progressed.

PROGRAM OPERATION: Since this was a completely new program, with no previous experiences to base day-to-day decisions on, an Operations Manual was prepared by the APL Staff to provide guidelines for program operation. This bulky manual is available for reference in the offices of the Accreditation Division and the Adult and Continuing Education Division of the Texas Education Agency, and therefore, is not included with this report.

A three-day pre-program workshop for all field personnel who would be involved was conducted in Austin, September 15-17, 1975. A close working relationship between the APL Staff and field personnel was established by delineating responsibilities and specifying APL Staff members who would be available to answer questions and help make decisions as problems arose. This close relationship has proven to be one of the strongest factors contributing to the success of the project.

As the program progressed, field personnel were involved daily in decisions effecting program operation. In addition to almost daily telephone contact, APL Staff and TEA representatives made visits to all operational sites in December, 1975.

A second workshop for Pilot Site personnel was conducted in Austin on January 8-9, 1976. Experiences of personnel from operational sites were shared with others yet to start their programs. Some operational guidelines were altered or changed by mutual agreement. A thorough study of the Generalized Life Skills portion of the program was initiated by Assessors at this meeting. A format for development of APL Instructional Modules was agreed upon by Learning Resource Personnel.

During January, February and March all new and old pilot sites were visited by APL Staff and representatives from the Texas Education Agency. Almost daily telephone contact continued, and new sites were helped as they started their programs.

A third Pilot Site Workshop was held in Austin on April 5-6, 1976. Assessors continued their study of the Generalized Life Skills, and agreed on a format for a complete revision during a scheduled June meeting. Five complete Instructional Modules were introduced to Learning Resource people, and copies provided to all pilot sites for field test. Prospective participants in a June Curriculum Development Workshop were indoctrinated on the format to be followed in module development.

On March 27, 1976, APL Staff attended graduation exercises for the first APL Competency-Based High School Diploma graduate at Huntsville State Prison.

During the last week in May, APL Staff visited CBHSD graduation exercises for Edgewood ISD, Abilene ISD and LaVega ISD. Graduation exercises for Pasadena ISD and Dyess AFB (Abilene ISD) CBHSD graduates were held in June, 1976.

Site	CBHSD Graduates
Windham	1
Edgewood	22
Abilene	11
LaVega	6
Dyess AFB	41
Pasadena	16
	97 Total

A two-week Curriculum Development Institute was conducted at Lago Vista, Texas, June 7-18, 1976. Forty-eight adult education teachers from Texas and other states attended. Texas A&M University issued 3 hours of graduate college credit to participants who enrolled and met their requirements. This group produced 15 APL Instructional Modules in rough form. Final clean-up and preparation for production is being done by APL Staff.

Scheduled concurrently with the first week of the Curriculum Development Institute at Lago Vista was an Assessor's Workshop. Assessors from the eight pilot sites completely revised the Generalized Life Skills, and worked out details for the preparation of an Assessor's Manual.

CONCERNS AND PROBLEMS: A mutual and overriding concern of U.T. Staff and Pilot Site Staff was that of maintaining high standards of demonstrated competencies for graduates. Very early in the program it became apparent that a few students who had scored as APL 3's and started work immediately on the Generalized Life Skills were producing work which indicated that they needed instruction in some of the basic academic skills, particularly writing. A diagnostic skills test was developed by the APL Staff, and released to Pilot Sites for field testing. Now in its third revision, a satisfactory score on this test, in addition to scoring as an APL 3 on the APL Test, is required of each student before he can bypass instructional requirements of the program.

As students moved into work on the Generalized Life Skills it quickly became apparent, from the number of telephone calls from Assessors to the APL office, that certain standards for assessing adequate levels of demonstrated competencies would have to be established. Other concerns expressed dealt with interpretations of wording, the purpose of the assigned task, the skills involved in the task, and what APL objectives each life skill was related to. Some of the life skills were rewritten at the January meeting to make them more meaningful, pending a complete revision to be undertaken at a June meeting. It was also agreed early in the project that the complete portfolio of each potential graduate would be reviewed by APL Staff to assure that continuity of standards was maintained throughout all pilot sites. This policy was followed throughout the year. At least 95% of all student portfolios required some additional work by students before they were finally certified as having met all required competencies.

During one week of intensive "give and take" at a June Workshop for Assessors, a complete overhaul of the Generalized Life Skills, including rewriting, consolidations, eliminations and additions, was completed. A unanimous consensus was reached on every revision, with the result that all participating Assessors agreed we now had a product everyone could live with. It was also determined that an "Assessor's Manual" was needed which would guide new Assessors in maintaining standards for assessing life skills. This manual has been prepared by APL Staff and is available for all pilot sites this Fall.

Another major concern was the lack of a complete curriculum to teach the APL competencies. Available to all sites was a Scope and Sequence providing sequenced enabling (instructional) objectives for each of the 65 APL Objectives, as well as an Annotated Bibliography covering a wide variety of adult education materials related to APL Objectives. The problem for most pilot teachers, who were working

only part-time on this project, was a lack of time to seek out the necessary materials and design lesson plans as rapidly as they were needed. A constant exchange of ideas and materials between APL Curriculum Staff and Field Staff only partially helped to solve this problem. A decision to utilize these "firing line" teachers to expedite APL curriculum production through scheduled curriculum development workshops has resulted in the development of some 20 APL Instructional Modules through June, 1976. Other scheduled workshops in 1976 and 1977 should complete the planned total of 47 modules, and finally alleviate this problem.

A third concern, and one that is a continuing problem, is the matter of personnel training. Without a thorough knowledge of the overall process, as well as a complete indoctrination in the duties and responsibilities of the specific job an individual is to perform, that individual is lost from the start. In every case where persons assigned to the CBHSD program were unable to attend pre-training sessions, mistakes were made in program operation. Plans are being made to consolidate efforts between the APL Staff and Texas A&M Adult Education Staff to design Staff Development Modules for training prospective CBHSD educators. These modules along with a series of other adult education staff development modules that Texas A&M University is in the process of developing, will be made available to the State Adult Education Cooperatives for statewide training of teachers.

A fourth concern of the APL Staff related to a policy established by the Adult and Continuing Education Division of the Texas Education Agency. This policy translated into no extra money for CBHSD Pilot Sites. Simply stated, the policy was--if you believe this program has a future for adult education and would like to pioneer in its inception, you can find ways to divert personnel and monies from other areas to this effort. Although this policy has prevented some potential pilot sites from entering the program, and has slowed individual teacher efforts toward curriculum development, we now feel that it is a good

policy. Those pilot sites who chose to enter the program have been most cooperative, and dedicated to making the program a success. There is also little likelihood that the program will be dropped at the end of the pilot phase. This would be a distinct possibility if special funds had been provided, then withdrawn at the end of the pilot study.

EVALUATION: The following is an attempt to evaluate effectiveness of the Competency-Based High School Diploma Pilot Program as it addresses questions that are at the core of the very reason for its existence. These questions are:

1. Is there a need among undereducated adults for such a program?
2. If so, is this program meeting this need--for all ages and ethnic backgrounds, male and female?
3. Is this program helping to solve one of the major problems inherent in all basic adult education programs--that of retention of the adult student in a program until at least minimal skills are acquired?
4. Are graduates of this program accepted in the community on at least an equal basis with those who have a GED Certificate or a Carnegie Unit Type High School Diploma?

The logical approach to this evaluation then, is to compare certain common statistics of the statewide CBHSD Program with conventional statewide adult education programs, as they pertain to the four questions above. Statistics for the CBHSD Program have been compiled from Annual Reports of six of the eight pilot sites.